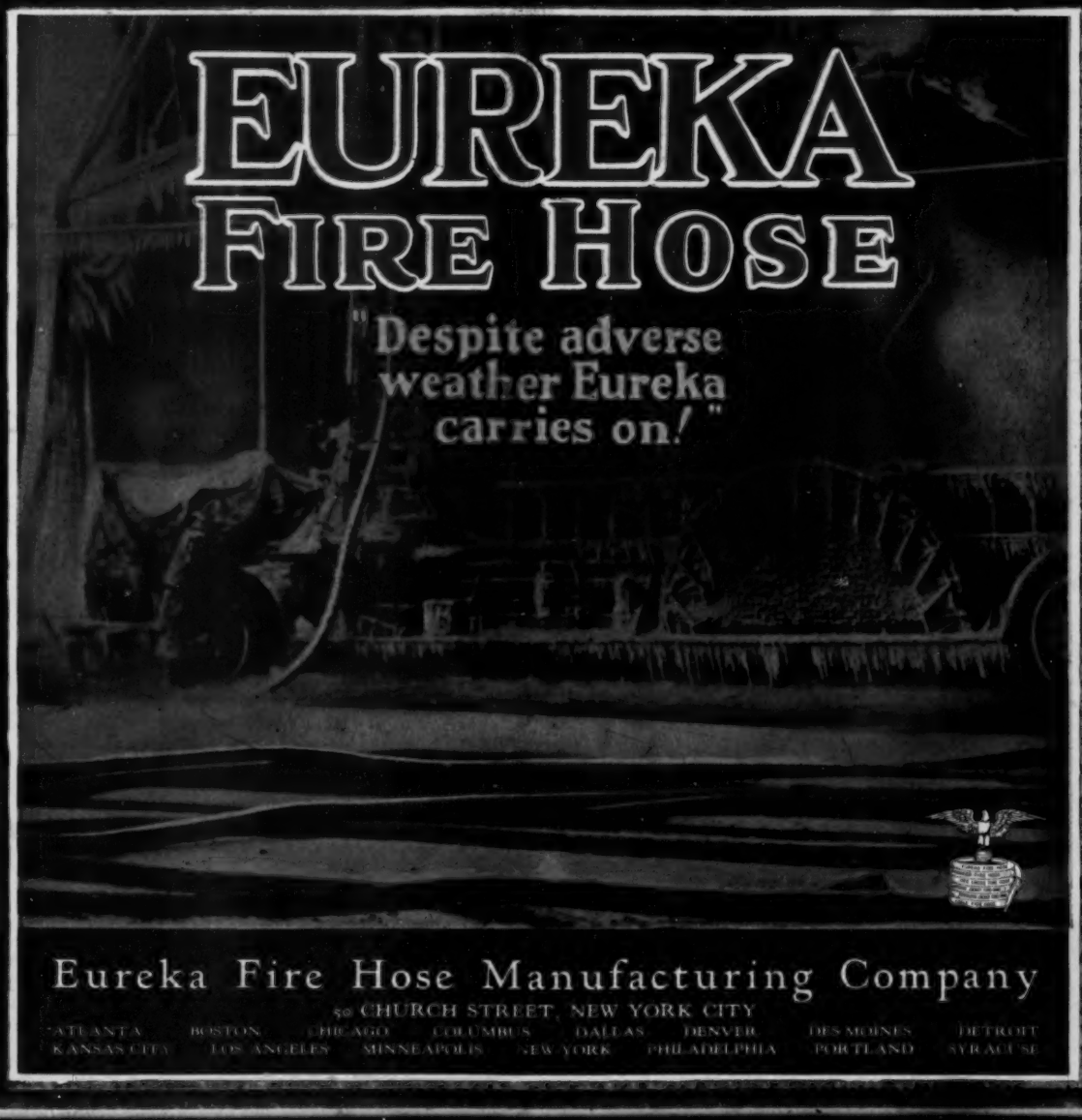
FIRE ENGINEERING

A Consolidation of
FIRE AND WATER ENGINEERING *and* THE FIRE ENGINEER

OCTOBER 19, 1927



Eureka Fire Hose Manufacturing Company

50 CHURCH STREET, NEW YORK CITY

ATLANTA BOSTON CHICAGO COLUMBUS DALLAS DENVER DES MOINES DETROIT
KANSAS CITY LOS ANGELES MINNEAPOLIS NEW YORK PHILADELPHIA PORTLAND SYRACUSE

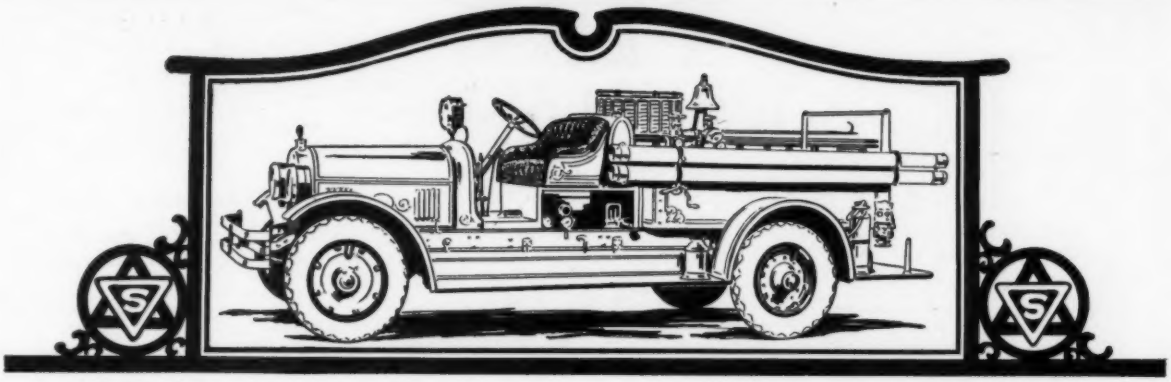
5 stations —or— 50

When you buy a Federal Code Siren System, it makes no difference how many stations your initial order calls for — additional stations may be added at any time without interruption to service or change in equipment.

This is just another refinement that emphasizes the greatness of Federal.

If you haven't the latest specifications for Federal Siren and Coded Alarm Systems, write for them today.

FEDERAL ELECTRIC COMPANY
8700 South State Street,
Chicago, Illinois



The New Seagrave 500-Gallon Pumper

NATIONAL BOARD OF FIRE UNDERWRITERS

RESULTS OF TESTS OF Seagrave Corporation pumper (12 hour test)

CITY Columbus, Ohio. DATE September 28, 1927.

CONDUCTED BY Engineers, Ohio Inspection Bureau. Manufacturer's No. 6757

Type Centrifugal

Engine Continental 6B 6 cyl. 5½ x 5½ 33.75 S.A.E.

Pump Seagrave Centrifugal 500 g.p.m.

Gear Ratio: Engine to Pump 1.4 to 1.4:1(thru transmission)

Current Requirements 500 g. p.m. at 120 # net pressure.
" " " " 300 # " "
250 " " " 350 # " "
197 " " " 400 # " "

Tested At Scioto River, Columbus, Ohio La 2½

FIRST TEST.- Duration SIX HOURS.

Layout of Hose and Nozzles Two 50' lines of 2½" O.R.L. hose siamesed into 1 3/8 " nozzle.

Average Discharge and Pressure 524 g.p.m. at 124# net pressure.

Speed R.P.M. Engine 1587 Pump Shaft

Displacement

Remarks

SECOND TEST.- Duration THREE HOURS

Layout of Hose and Nozzles Two 50' lines of 2½" O.R.L. hose siamesed into 1" nozzle.

Average Discharge and Pressure 260 g.p.m. at 293 # net pressure

Speed R.P.M. Engine 1753 Pump Shaft

Displacement

Remarks

THIRD TEST.- Duration THREE HOURS

Layout of Hose and Nozzles Two 50' lines of 2½" O.R.L. hose siamesed into a 1" nozzle.

Average Discharge and Pressure 178 g.p.m. at 353 # net pressure.

Speed R.P.M. Engine 1988 Pump Shaft

Displacement

Remarks

GENERAL REMARKS (As to performance and condition of machine during and after test)

No engine or pump trouble experienced during the test.

The new Seagrave, with a pumping capacity of 500 gallons of water per minute, will prove its worth in affording adequate fire protection to small municipalities, corporations and manufacturing plants. Shown above is a reproduction of its record in a twelve-hour test conducted by the Ohio Inspection Bureau of the National Board of Fire Underwriters.

You can depend on the Seagrave 500-Gallon Pumper. It is reliable.

The SEAGRAVE Corporation

COLUMBUS, OHIO

BRANCH OFFICES AT:

Boston, Mass.
New Haven, Conn.
Birmingham, Ala.
Philadelphia, Pa.
Chicago, Ill.
Dallas, Texas
Los Angeles, Cal.
Kansas City, Mo.
Pittsburgh, Pa.
Seattle, Wash.
San Francisco, Cal.

The Journal of the Fire Protection Profession Since 1877

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FIRE ENGINEERING

A consolidation of FIRE AND WATER ENGINEERING *and* THE FIRE ENGINEER

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"Requires Immediate Attention"

A CABLE message to the San Francisco News Co. was passed on to us with this letter:

"We have received an order by cablegram which reads:

"Forward issues of FIRE ENGINEERING containing instalments one to seven inclusive new rules of the New York Fire Department."

We would appreciate having you fill this order to the best of your ability, sending the issues required direct to:

Subscription Department
Messrs Gordon and Gotch, A/sia, Ltd
Barrack & Clarence Streets
Sydney, N.S.W. Australia

and send the bill covering same to this office for payment. As stated above, this order arrived by cablegram, and *requires immediate attention.*"

Wherever you go, the world over, FIRE ENGINEERING is looked to as a final authority in fire prevention and fire protection matters and it is a pleasure to be able to serve this field in this constructive way.

The Publishers

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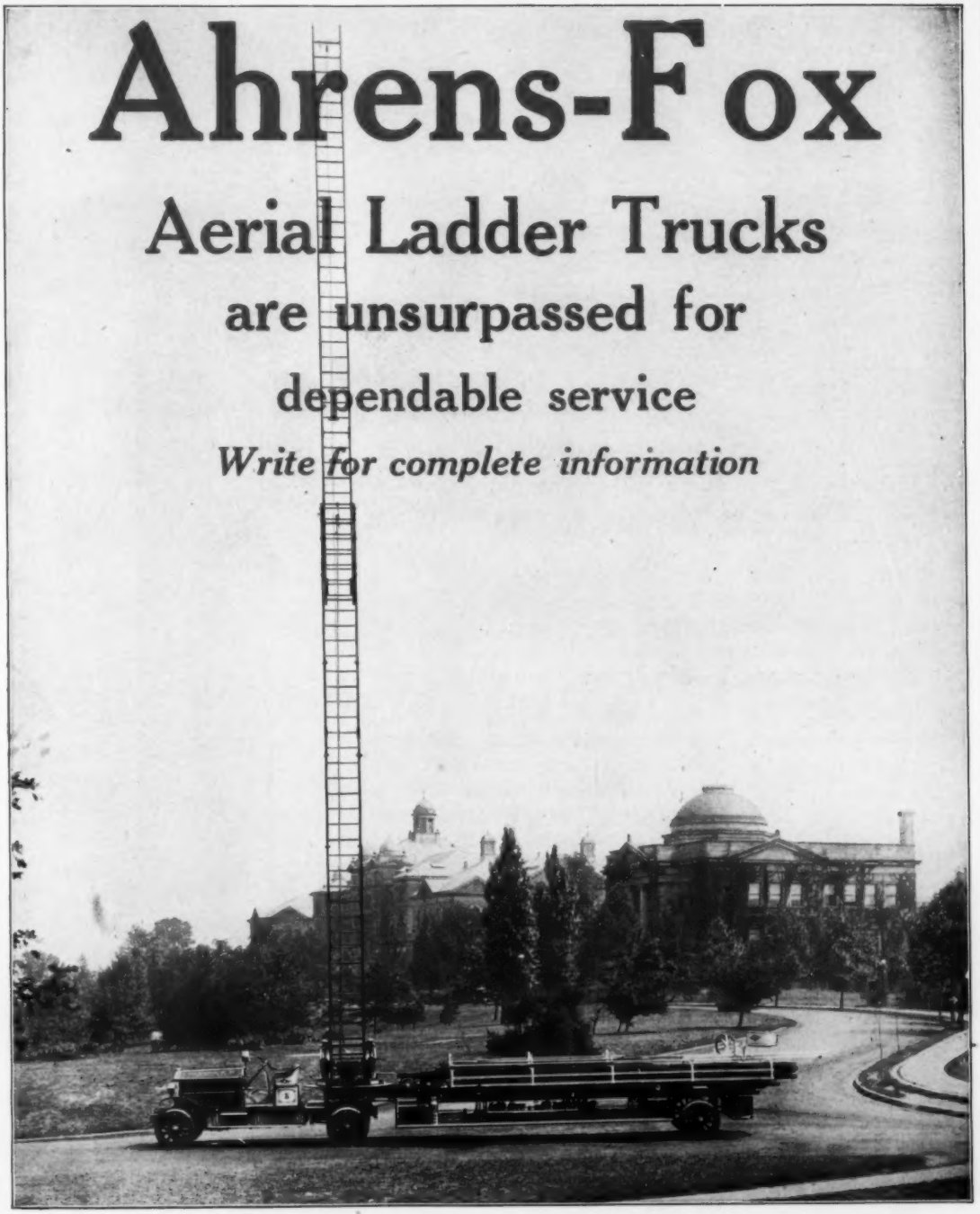
Ahrens-Fox

Aerial Ladder Trucks

are unsurpassed for

dependable service

Write for complete information



The Ahrens-Fox Fire Engine Co.

"Builders of Quality Fire Engines"

Cincinnati, Ohio

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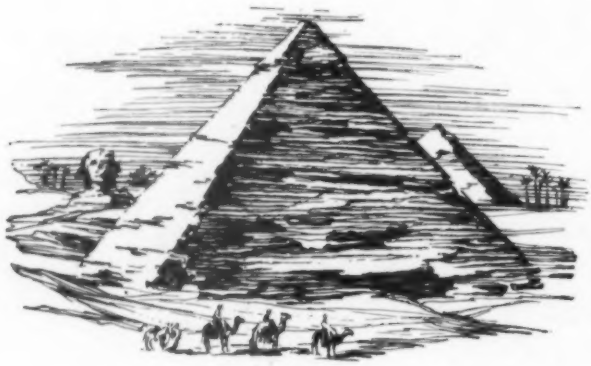


Rugged Construction

A picture of a Pyramid may appear somewhat out of place in a fire hydrant advertisement. That is until you realize just how much a Darling Fire Hydrant has in common with a Pyramid. Both are outstanding examples of rugged construction—*both were built to endure.*

When you install Fire Hydrants ask not only how well they will serve, but how long they will last. Find out how well they will withstand the ravages of time and the "hard knocks" which accompany constantly increasing city and suburban traffic. And then specify "Darlings"!

The weight and the extra large barrel give Darling Fire Hydrants unusual strength. And the rugged construction of every working part overcomes the menace of many abuses.

You would be well justified in choosing Darling Fire Hydrants on the basis of rugged construction alone.

DARLING VALVE & MFG. COMPANY
WILLIAMSPORT, PA.

New York
Chicago

Oklahoma City
Houston

DARLING
FIRE HYDRANTS

The *Foamite* Generator produces genuine Firefoam

with a *single, patented powder*

FOAMITE-CHILDS chemists have made another outstanding contribution to the science of fire protection. After months of research and tests under actual working conditions they have perfected a *single powder* which, when combined with water in the new *Foamite* Foam Generator, produces genuine fire-killing Firefoam.

So great has been the success of this revolutionary method that imitations have already appeared. But it is impossible to duplicate the formula for the single powder or to imitate the mechanical principles of the *Foamite* Generator itself. Both are patented and under the exclusive control of Foamite-Childs.

Fire Chiefs everywhere know the Foamite-Childs reputation and accept the new *Foamite* Foam Generator, exclusively employing *Foamite* Generator Powder, as the one dependable appliance of its kind.

Write for full information.

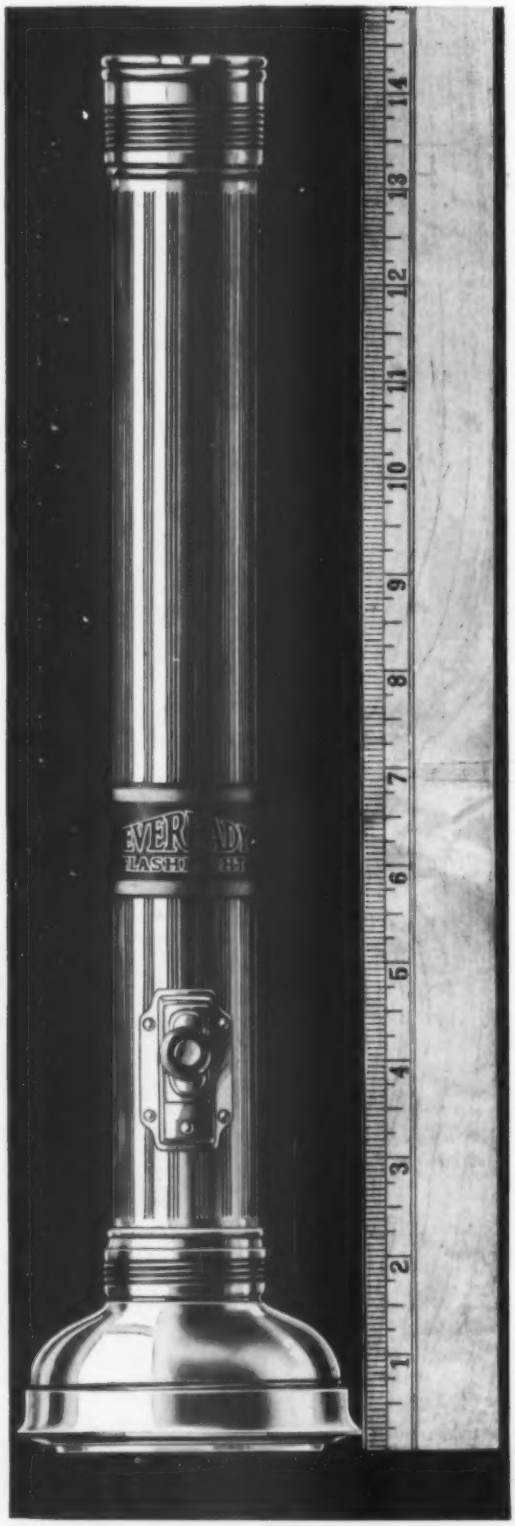
Foamite-Childs Corporation, Fire Protection Engineers and Manufacturers, 379 Turner Street, Utica, N. Y. Sales and Engineering Representatives in all leading cities. *Foamite-Childs of Canada, Ltd., Toronto, Ont.*

Foamite *Generator Powder contains all the chemical elements necessary to produce genuine Firefoam. The powder is non-caking and non-deteriorating. The patented container keeps it always in perfect condition*

Foamite-Childs Protection

A Complete Engineering Service

Against Fire



A DOUBLY USEFUL EVEREADY FLASHLIGHT FOR FIRE OFFICERS

WHEN you are directing men through a burning building, here is the flashlight you should have.

Or, when you are on inspection work this same flashlight will exactly fill your needs.

In a clear atmosphere it casts a penetrating 1000-foot beam. With the Eveready focusing feature the beam can be diffused to various widths. Imagine how useful it would be in a heavily smoke-charged building! The ring-hanger makes it convenient to snap to your belt when not in use. It cannot be accidentally lighted. It has the safety-lock switch (another Eveready feature). It is an *electric* light. This makes it absolutely free from all danger of igniting any kind of gas. Substantially made, it is well suited for rough, vigorous usage. It is light in weight and can be carried in the hand without becoming tiresome.

Ask for Eveready 5-cell focusing Flashlight No. 2645. It is sold at all stores for $5.75, complete with batteries.

NATIONAL CARBON CO., INC.
New York UCC San Francisco
Unit of Union Carbide and Carbon Corporation

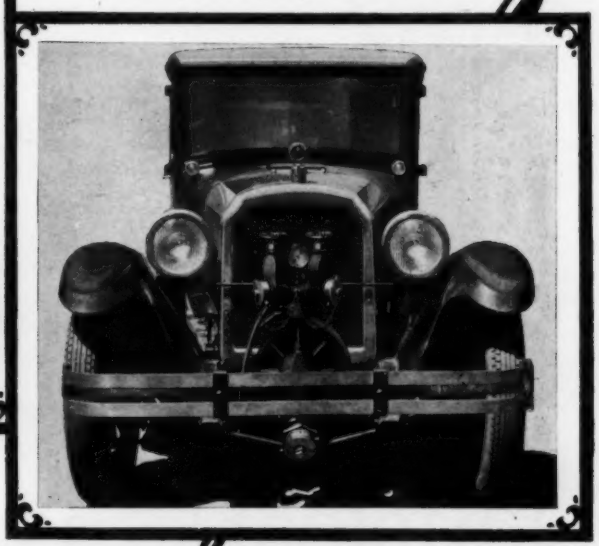
EVEREADY FLASHLIGHTS & BATTERIES
–they last longer

This flashlight is convenient to carry. Firemen will find it indispensable. Ask for Eveready 2-cell Focusing Flashlight No. 2671. Price $1.50, complete with batteries.

Showing high pressure, steady, non-pulsating stream delivered by new Barton Pump.

ENTIRELY NEW DEVELOPMENT

The new Barton Fire Pump is entirely new — radically different from any fire pump ever produced before by this company or by any company — many important improvements. It warrants your investigation — now!



New Barton installed on front of car—ready for service.

Water!

Plenty of It at Pressures Up to 200 Pounds

ANYWHERE there is water of any kind — dirty or clean — under hydrant pressure or at suction — you can use this new Barton Pump. It answers every city and rural need.

This is the new pump that drives direct from your car engine (practically any make) and primes itself automatically. This is the pump that delivers two quenching streams at pressures up to 200 pounds — hours at a stretch without overheating the engine. This is the pump that successfully meets every fire fighting requirement — yet the smallest community can afford it.

Write for Announcement Bulletin

Your next fire may be a stubborn one—be prepared! Write us today for Announcement Bulletin giving complete information and showing interesting pictures of the new Barton in action. Better still ask for our low price, specifying the make of car you plan on using.

AMERICAN STEAM PUMP COMPANY
BATTLE CREEK, MICHIGAN

CENTRIFUGAL TYPE PUMP

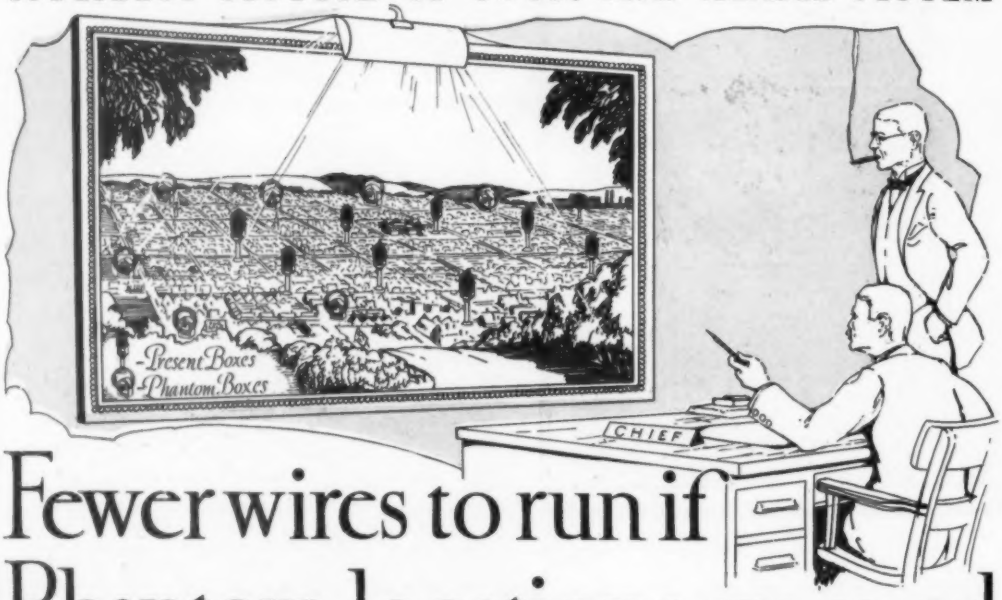
Unlike the rotary type pump, this new Barton has no wearing surfaces and will, therefore, always maintain its initial high efficiency. Nor does it matter how severe the service — this centrifugal pump will not falter regardless of sand, dirt or cinders in the water it handles.

COMPLETE AT LOW PRICE

The New Barton comes fully equipped as shown above, including patented power take-off, patented automatic primer, suction connection with cap, siamese gated outlets and accurate pressure gauge — finished brilliant red enamel with fittings heavily nickeled — complete at surprisingly low price.

BARTON *New* FIRE PUMP

A PERFECT PICTURE OF YOUR FIRE ALARM SYSTEM



Fewer wires to run if Phantom locations are used

Give a number to every street corner in your city which has no fire alarm box. Consider such corners as being equipped with "Phantom Boxes." When a telephone alarm is received transmit that number.

A YEARLY PROGRAM

By installing a definite number of boxes each year in the more important locations of "Phantom Boxes," you will soon have adequate box protection and the assurance that adequate protection will be maintained as the city grows.

The "Phantom" Box Plan gives you a perfect picture of your fire alarm system. A glance shows both your present fire alarm boxes and those that will be needed during the next ten years.

Where this method is used you can plan your circuits, either overhead or underground, in advance, so as to save money when fire alarm boxes are actually installed. Cables with an adequate number of conductors to take care of all the "Phantom" locations, can be provided. Junction boxes can be placed at the "Phantom" locations so that fire alarm boxes may be connected easily later on without the necessity of cutting the cables.

Test posts can also be connected to underground circuits at "Phantom" locations to serve there until such time as a fire alarm box is needed. It can then be replaced easily with a fire alarm box. A sufficient number of laterals can also be provided to take care of future extensions to "Phantom" locations, without the necessity of digging up newly laid pavements.

The Gamewell Company

Newton Upper Falls, Mass.

"A Box A Block"

FIRE ENGINEERING

(A Consolidation of FIRE AND WATER ENGINEERING and THE FIRE ENGINEER)

The Journal of the Fire Protection Profession

VOLUME LXXX OCTOBER 19, 1927 NUMBER 21

St. Louis Tornado Keeps Firemen Busy

Men Respond to Call from Broadcasting Stations—Patrol System Established to Take Care of Damaged Fire Alarm Circuits

LUCKILY for the fire department, rain wetted down the area destroyed by the St. Louis tornado on September 29, which in five minutes did $75,000,000 damage. Sixty-nine died as the result of the furious storm, nearly six hundred were injured and five thousand homes were damaged.

Chief Charles Alt

The storm struck the southwestern section of the city, with sudden fury at 1 p. m. After the first blow, the storm widened out to cover a larger area and the intensity of storm increased. According to the weather bureau the storm reached a velocity of ninety miles an hour and was followed by a terrific rain storm.

The rain saved the city from a possible conflagration or an epidemic of small fires. However, the fire department adjusted itself to meet the emergency and the low fire losses speaks well for the generalship of Chief Charles Alt of St. Louis.

Firemen Called by Radio

Within one hour after the tornado hit the city, Chief Alt had the message broadcast over the various radio stations in the city that all firemen who were off duty should report to their fire company. The department has 950 members and at the time of the gale, 475 men were off duty.

Fire alarm circuits were out of service. Only by personal communications could the fire department be called.

All of the men reported immediately to establish a chain to take the place of the disrupted fire alarm system. Nor did the work of the men end with the organization of means of communication. They worked at whatever task they could to relieve human suffering, distress and the reduction of possible damage. They toiled until long after the danger from fire was passed. Red Cross, Boy Scouts and the militia were also called out.

Patrol System Put in Force

With the entire fire department force available, Chief Alt started a patrol system. Of the fifty-six engine companies and twenty-three truck companies, ten engine companies and five truck companies were left intact to answer five alarms from the section of the city that was not damaged. Firemen who were not on duty with these companies were placed in all the available autos that could be mustered and told to cruise about the stricken area. Two or three firemen were in each automobile.

Three Stores and Flats Cave-In

The storm destroyed mostly two and three story dwellings, homes, and flats used as rooming houses. Schools and churches that served the residents of this section were also damaged—everything in the area was touched.

A heartbreaking sight was the fire which started after the cave-in of three stores and flats at Prairie and Page avenues. Six lives were lost. It was necessary for the firemen to dig in the ruins for the bodies while fire was eating its way through the wrecked homes.

All told forty fire alarms were received. As the fire alarm service was not functioning properly, most of the calls were from "still" alarms.

There are 1,761 fire alarm boxes in service so arranged that from thirty to thirty-five boxes are on one circuit. The storm placed forty one fire alarm circuits out of service or a total of 1,230 boxes. Only 531 boxes were left in service to protect such a large area. In other words each box had to cover an area that was normally taken care of by three such boxes. Men versed in fire department routine can then have a picture of what the St. Louis fire department had facing them.

In the down town area which was not damaged, the fire alarm circuits are underground. They were only placed overhead in the district that was damaged by the wind storm.

Arthur A. Benda, secretary of the Division of Fire and Fire Prevention in St. Louis to whom FIRE ENGINEERING is indebted for the data on the operation of the fire department, writes as follows:

"Our firemen responded nobly to all calls and did a lot of excellent work. We are all thankful that we did not lose any of the department members while they were engaged in this most trying work. Our members are at present patrolling the sections of the city that still require their help. They have sacrificed their days off to do this.

"It is my understanding that the men will continue to remain at this duty for another few days until conditions commence to adjust themselves. The men worked nobly and unselfishly."

It was the beautiful West End section of the city that bore a

Fire in One of the Homes Destroyed by the Storm
A number of similar fires were reported as an aftermath of the storm. The heavy rain that fell at that time wetted the roofs and prevented a possible conflagration.

Looking Down Olive Street in the District Damaged by the St. Louis Tornado

A fairly good idea may be obtained of the large amount of wreckage that was strewn about the area and the type of damage to the houses. Traffic is attempting to wend its way through the narrowed and wreckage-strewn thoroughfare.

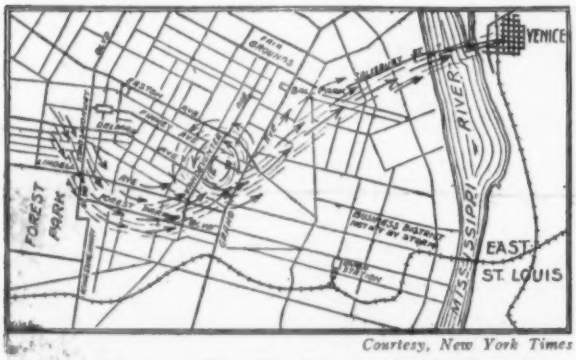
large part of the tornado's wrath. It is the district of beautiful homes and boulevards. Many of the wealthy residents have homes there.

As peculiar as it may sound, histories of conflagrations indicate that most of the damage is done in such sections.

At the time that a large area was destroyed in Averne, N. Y., a section of Long Island, the fire died out when the wind carried the blaze to the poorer section of the city. Results in some of the other conflagrations point to a parallel condition.

Rumbling Precedes Storm

Before the storm broke with lightning swiftness, there were jagged flashes of lightning about the western horizon, and low



Courtesy, New York Times

Area of St. Louis That Was Damaged by the Tornado

The arrows indicate the direction of the wind. The section damaged is indicated in drawing.

rumbles of thunder. Occasionally there would be an onimous crackle. All the while darkness commenced to settle about the city.

There then came a period of tense silence. It was strange. It appeared to herald something vastly stranger. There was a swirl of black dust high up in the sky. Then a spiral of loosely formed clouds started heading downward bringing an inky blackness in its wake. Then came the twister.

Glass could be heard crashing everywhere. Huge missiles went sailing through the air. Chimneys were torn off, cornices chopped from sturdy buildings, and sections of roofs were tossed about like so much straw.

Everything went. Bricks, tiles, tops of automobiles, huge limbs from trees and even trees themselves, signs and every kind of object went swirling through the grayish-black dust.

Rescue Work Started

Shortly after this five-minute period of Hell, calls were sent to the local hospitals.

All of the 1,500 members of the police department, regardless of their hours off, were called to aid in the rescue. The orders to the police were, "Shoot to kill. Make a coroner's case out of every one you catch looting in any form whatever."

Within two hours after the storm, the 138th Infantry was ordered mobilized.

Results are Gruesome

It is difficult to paint a word picture of the results. Beautiful Maryland avenue was no more. All along the show place of the city was piles of wreckage.

The greatest disaster was that which happened to the Central High School in which there were between 1,000 to 1,500 pupils. The tower on top of this building fell through the roof and crashed through two of the concrete floors of the school. Within two and one-half days after the tornado, six bodies were recovered.

The rescuers had to cut through a mass of tangled structural iron and to chop through blocks of concrete before they could reach the bottom of the heaps.

Policemen became hoarse shouting warnings against the danger of live wires and collapsing walls. Women rushed about frantically searching for their children. Fire apparatus and ambulances shrieked their way through the din on their errands of mercy.

Some See Sheet of Flames

In the region bounded by Sarah and Whittier streets and Lindell and Delmar boulevards, many reported seeing a sheet of flame. It appeared to race about for only a minute and then there was a deluge of rain. Thirty-five school children were at a nearby confectionary store for luncheon. Afterwards they started across the street for their school. Seeing the street get dark, the proprietress of the store rushed out to look, but was barely able to close the door of her shop to prevent from getting burned.

There are many accounts of the storm, some more and some less gruesome. Each one has his little or great tale of woe to tell.

City Has Had Such Storms Before

The storm of September 29 was not the first in the history of the city. It was the third since the tornado of May 27, 1896, in which the number killed then was 128. At that time ninety-

(*Continued on page* 1098)

Fighting Fires Before They Occur

Care and Foresight in Fire Prevention Matters Will Save Immense Sums That Would Otherwise Go Up in Smoke

By C. W. MOWRY, Assistant Manager, Inspection Dept., Factory Mutual Fire Insurance Companies*

IN this paper the author stresses the importance and necessity of good housekeeping to fire prevention. By care and the exercise of judgment and common sense, only, can the average fire be guarded against:

During the Russian-Japanese War, an American newspaper correspondent arrived at the Japanese Army Headquarters at the

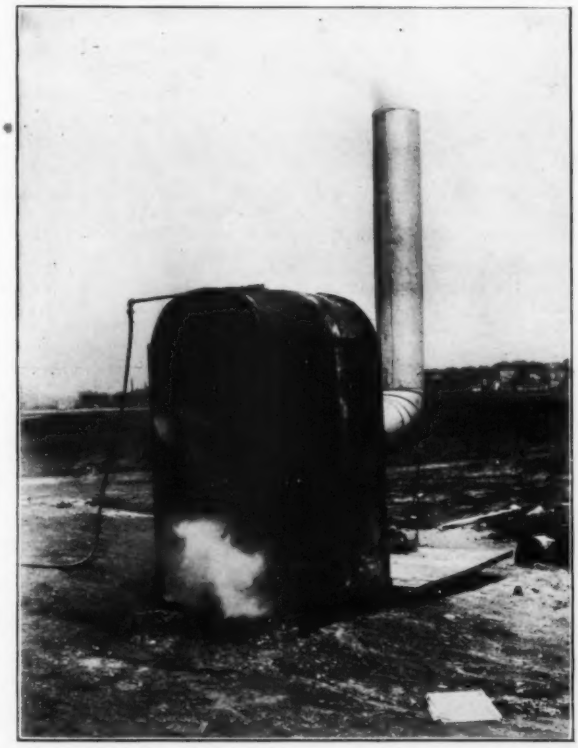


Fig. 1. Spray Booth Containing Pyroxylin Lacquer Dust Into Which a Lighted Cigarette Has Just Been Thrown

height of one of the worst battles in the Manchurian Campaign. The correspondent expected to find material for a good story in the excitement and anxiety which he supposed always prevailed at an army headquarters during a battle, but imagine his surprise to find everything calm and peaceful, with General Kuroki, Commander in Chief of the Japanese Army, quietly fishing on the bank of a nearby stream.

As soon as the correspondent had presented his credentials and been properly identified, he asked for an interview with the general; and at the close of the interview he said to the Commander in Chief as politely as possible, "You don't seem to be very much concerned about the outcome of this battle." "No," replied the wily little Jap, upon whose shoulders rested the entire responsibility, "No, I fought this battle two years ago back in Tokio."

I tell this story, which appeared in *Harper's Magazine*, because just as some battles can be fought beforehand by careful planning in advance, by anticipating emergencies, and preparing for them, so can some fires be fought beforehand by a study of the hazards involved, by developing suitable safeguards, and providing adequate protection. And just as actual warfare with its hand grenades, machine guns and heavy artillery is more spectacular and more easily understood than planning a campaign, so is actual fire fighting with hand equipment, hose streams and water towers more spectacular and more easily understood than fire prevention and the science of fire protection.

Some Examples of Fire Preventing

One way in which the fire protection engineer fights fires beforehand is by preventing fires. Some may ask how we know that fires are actually prevented. They may say that the fires might never have happened anyway and that we only think they are prevented. I could give many illustrations of practical fire prevention. I could tell, for example, of the experience of the Hood Rubber Company, Watertown, where more than one hundred fires occurred in the rubber spreader room within three years. This was traced to static electricity, and when a small jet of steam was allowed to escape in the room and maintain the necessary relative humidity, the fires ceased and not a single one has occurred for two years.

I could tell how the superintendent of a New Bedford Cotton Mill was sure that he had an enemy who was setting mysterious fires in the piles of cotton in his picker room, and how the cause was traced to the fact that the grease used on some of the machinery had been adulterated with horsefat to cheapen the product. The presence of this animal oil had resulted in spontaneous ignition. As soon as a change to a safe grease was made, the fires ceased and other mills using the dangerous prod-

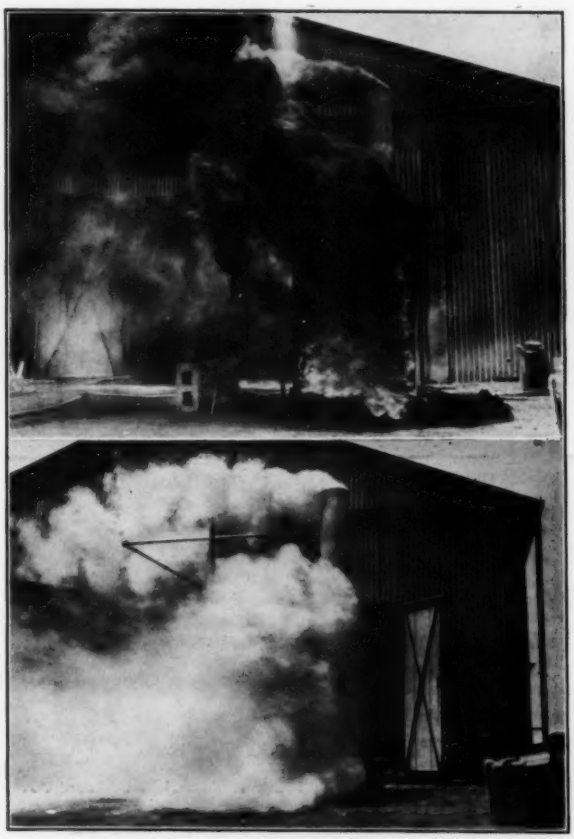


Fig. 2 (Lower). Enormous Volumes of Smoke Pouring from Booth, as the Lacquer Dust Decomposes. Fig. 3 (Upper). The Contents of the Booth Have Burst Into Flame of Great Intensity

* Excerpts from a paper read before the annual convention of the New England Water Works Association at Boston.

uct were notified, and thus many other fires were undoubtedly prevented.

I could tell of a public utility company which had been troubled for twenty years with fires in their coal pile, resulting in a loss of ten to fifteen percent of the value of the coal, and how after adopting the packing and rolling process of storing the coal, which excludes the air and prevents spontaneous combustion, no fires occurred for three years, even though 200,000 tons were stored in a pile thirty feet high.

I could go on and give many other examples, but I have told enough, I think, to indicate that the fire protection engineer really does prevent fires.

The Hazard of Pyroxylin Lacquer Manufacture

The rapid development of pyroxylin lacquer for finishing automobile bodies, furniture, and miscellaneous articles, has introduced a new type of fire for the fire protection engineer to fight beforehand. The deposit of lacquer dust which accumulates in spray booths and in the ventilating pipes leading from them is a serious fire hazard.

Fig. 1 shows a spray booth containing lacquer dust into which a cigarette butt has been thrown. The small cloud of white smoke indicates the beginning of the decomposition of the lacquer deposit. Fig. 2 shows enormous volumes of the smoke pouring from the booth, which in Fig. 3 has burst into flame, shooting out the full size of the opening.

Imagine now a factory devoted almost entirely to this spraying process on a large scale, and you will have some conception of what occurred at the Briggs Automobile Factory in Detroit last April. You may remember that the newspapers carried front-page headlines telling of this severe explosion and fire, in which two men were killed outright and twenty died of burns. Twenty-six engine, six ladder and three rescue companies responded to this fire.

It is only fair to state that this building was equipped with automatic sprinklers, but a violent explosion, which is supposed to have resulted from the ignition of a cloud of lacquer dust, broke one or more of the large pipes supplying the sprinklers, putting them out of service at the start. The fire then spread rapidly through unprotected door and wall openings, and completely destroyed the building, with a loss of about $2,000,000.

Fig. 4. Huge Pile of Pulp Wood Logs at a Paper Mill Ignited by a Spark from a Passing Locomotive

A threatening fire near the top of a pulpwood pile in a paper yard. Although the fire was at a point difficult of access and burned for two hours, the frozen condition of the pile favored the fighters. The quick and efficient action of the fire brigade backed by an ample water supply kept the loss down to a few hundred dollars.

By closing the sprinkler control valves, the water pressure and supply were conserved for the hose streams, by means of which the remainder of the plant was saved.

Automatic Sprinklers in Fire Protection

In spite of an occasional instance of this kind, in which a sprinkler system is overpowered, the effect of automatic sprinkler protection upon the loss ratio has been remarkable. The curve shown on this slide gives the loss per hundred dollars at risk in several thousand industrial plants in America. You will note that from 1850 to 1875, which was the period before automatic

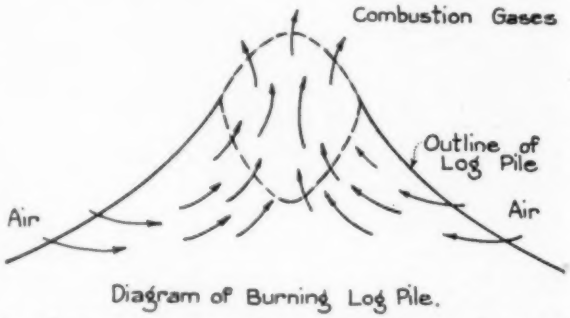


Fig. 5. Diagram Showing Course of Combustion Gases and Air in Log Pile Fire

sprinklers were in use, the loss for every hundred dollars at risk ranged from twenty to thirty cents, and then during the period from 1875 to 1895, when sprinklers were being installed, first in rooms of hazardous occupancy and later generally throughout the plants, the loss per hundred dollars steadily declined to about five cents. From that period to date, when sprinklers have been in general use in these plants, the loss ratio has not only continued at this low figure but is slowly decreasing. Of course, the entire credit for this reduction cannot be given to sprinklers alone, because fire departments have improved in efficiency, public water supplies have been extended, and strengthened, and the science of fire protection generally has exerted a tremendous influence. Nevertheless, the automatic sprinkler is probably the greatest single factor in reducing fire loss in manufacturing properties.

The business man who erects a building or factory of good construction and protected with automatic sprinklers is a better citizen than the one who builds a fire trap, without protection. The employees of the first man are safer, his business is more likely to be staple, and he will make less demand upon the fire department and water works.

Where Automatic Sprinklers Cannot Function

Automatic sprinklers, however, are not applicable to all conditions. For example, there is a $12,000,000 paper mill, which in itself is protected by automatic sprinklers, and yet $2,000,000 worth of logs stored in the yard during the summer months to insure continuous operation during the winter cannot be protected by automatic sprinklers. Fig. 4 is a close-up view of the log pile and will give you some idea of its size and height. Imagine, for example, on a hot summer day when the surface of the pile is dry, sparks from a passing locomotive landing on top of this pile and starting a fire. You can readily appreciate what a difficult and hazardous undertaking it would be for men to attempt to climb up over these logs with a line of hose. Unless water is applied at the very start, it is almost impossible to check a fire in one of these piles, and no ordinary hose stream can reach the top of the pile from the ground. The picture shows a fire under way at the very top of one of these log piles. You can see the men handling the hose lines in an effort to control the fire.

How a Log Pile Fire Burns

Fig. 5, a diagram of a log pile fire, shows how the sparks and embers can drop down into the interior of the pile while the water from the hose streams is largely shed from the surface. The diagram also illustrates how the air to support combustion filters in through the spaces between the logs and maintains combustion in the very center. This progress goes on when once started, burrowing deeper and deeper until the entire pile is on fire, as shown in Fig. 6. Later on the pile resembles a mountain of live coals, which it really is, and when it has reached that

(*Continued on page* 1088)

A Difficult Fire to Handle

Department Did Very Good Work in Confining the Fire to Buildings Involved—Some Suggestions

THE fire described in the last issue of this journal was one of the most severe which can be experienced in a city the size of that in which the fire occurred. Involving two highly combustible buildings with very inflammable contents and surrounded with other buildings almost equally as hazardous from a fire standpoint, the department was faced with a problem which taxed not only the resources but the ingenuity of every man present. There is little to criticize in the operation of the department at this fire. A few minor suggestions are offered in the following paragraphs but in general the task of handling this fire as carried out by the department may be considered as well done.

As noted in the last issue of this journal, the city in which this fire occurred has a population of about 70,000 and is located in the north central part of the country. The water supply in general is adequate, but only five hydrants were available to the department when operating at this fire. One of these hydrants was connected to a four inch main (hydrant No. 5, shown in the sketch herewith).

The Fire Department

The fire department consists of 12 companies, with the following equipment:

Engine Co. No. 1, 1,000 gal. triple combination.

Engine Cos. Nos. 2, 3, 4 and 7, 700 gal. triple combinations.

Hose Cos. Nos. 1 and 2, combination chemical and hose cars, each carrying 1,500 feet of 2½ inch hose.

Ladder Co. No. 1, an 80 foot aerial ladder, tractor drawn.

Ladder Co. No. 2, a city service truck.

Response to Alarms

Response to alarms is as follows: First alarm, Engine Cos. Nos. 1 and 2, and Ladder Co. No. 1.

Second alarm: Engine Cos. Nos. 3 and 4, and Hose Co. No. 1.

Third alarm: Engine Cos. Nos. 5 and 6 and Ladder Co. No. 2.

Other apparatus is secured by special call only.

Description of Property Involved

The property immediately involved in the fire included a two story brick warehouse stocked with building materials, some combustible and others not so; a three story frame feed and hay warehouse; a wood sash and door factory; a coal yard and coal pocket, and dwellings.

As shown in the diagram herewith, the sash factory extended through the entire block. It was of two story height and brick with wood joists. To the rear of this plant was a storage yard for lumber, as indicated in the sketch, and directly behind the lumber piles was the coal yard and coal pocket. The coal pocket was of timber and plank construction. Other structures in the neighborhood are shown in the diagram.

The Fire

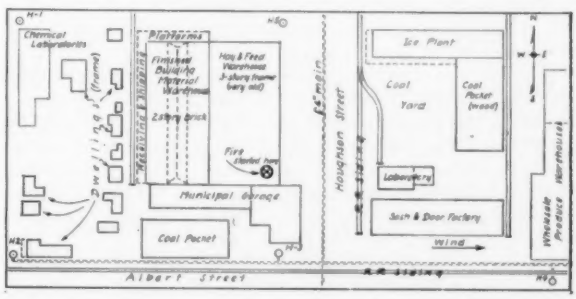
As noted in the description in the last issue of this journal, the fire started somewhere around midnight on the ground floor of the hay and feed warehouse—presumably from spontaneous ignition in oily beef-fattening food. The fire was not discovered until it had extended to the second and third floors. At that time a night fireman at a plant northeast of the warehouse noticed the blaze and sent in a call to the fire department.

A first alarm assignment was sent out in command of the assistant chief, who, upon his arrival found the warehouse ablaze and a vigorous breeze blowing from the west, driving a shower of sparks across Houghson Street toward the coal yard and sash factory.

The assistant chief placed Engine Co. No. 1, the 1,000 gallon pumper, at hydrant No. 5 and a 750 gallon pumper of Engine Co. No. 2 at hydrant No. 3.

An Error in Apparatus Placement

Placing the 1,000 gallon pumper at hydrant No. 5 was a mistake but could only have been checked by the assistant chief knowing the size of main to which the hydrant was attached, for this hydrant was attached to a 4 inch main. Had it been marked in any manner as to indicate the size of main to which it was attached the assistant chief would have avoided the mistake in connecting to that hydrant at first and thereby forced to use but a part of the capacity of his pumper in



supplying the single stream which the main was capable of supplying.

This, then, is the first error but is an honest one and is one which could only have been prevented by the assistant chief being acquainted with all of the hydrants in his territory or else having the hydrants marked.

A better arrangement would have been to place the 1,000 gallon pumper at hydrant No. 3, stretching in two lines to a pipe located in front of the three-story frame hay and feed warehouse on Houghson Street. Rather than using 1¼ inch nozzles as were employed on lines from both of these first two engines in service, it would have been far better practice to use two lines from the 1,000 gallon pumper at hydrant No. 3 and two lines from Engine Co. No. 2 located at another hydrant on a proper size main; parallel lines to be stretched from each of these two and siamesed into two 1½ inch nozzles on Houghson Street. These two heavy streams could have quickly deadened the fire on the outside of the building and might have gone a long way toward preventing the collapse of the building. At least they would have been able to cover the exposures properly and prevent fire from extending toward the east. Whether or not they could have held the fire to the one building or prevented

it from extending across Houghson Street is problematical. However, the chances would have been much better for holding this fire if large streams had been used.

The assignment of two lines to the building material warehouse was about all that could be accomplished by the two companies, Engine Cos. Nos. 3 and 4 at hydrants Nos. 2 and 4, due to the comparatively long stretches and the fact that the lines had to be taken up above the street. These two lines must have held the fire fairly well because when augmented by two lines from the third alarm they were able to bring the fire in this building under control.

Use of Heavy Streams

The use of the two heavy streams from Engine Cos. Nos. 1 and 2 would be able to hold the fire in the three story frame building from spreading across the street and at the same time these lines would be able to cover the municipal garage in much the same manner as the two lines from Engine Co. No. 2 performed this work in the description of the fire appearing in the last issue of this journal.

The transmission of additional alarms was about as prompt as could be desired. A second alarm was transmitted at once and a third alarm just as soon as the second alarm apparatus was rolling in. It might have been better judgment to have transmitted the second and third alarms at the same time and thereby saved a few minutes. This arrangement might make possible a little quicker operation in holding the fire in the building material warehouse and also in checking the spread of fire across Houghson Street.

Engine Co. No. 5 on the third alarm would be placed at hydrant No. 5 and a single line stretched to the top floor of the building material warehouse.

Engine Cos. Nos. 6 and 7 would be placed respectfully at hydrants Nos. 4 and 3. Each to stretch in two lines of hose, the engine at hydrant No. 3 to stretch lines to operate on top of the municipal garage into the two story brick building materials warehouse. Two lines from the second engine placed at hydrant No. 4 would operate in covering any fire which reached the lumber piles and sash factory across Houghson Street.

Concentrating Lines at Fire

Notice by this arrangement that three lines have been put in operation inside the building materials warehouse while two other lines have been put in operation from the top of the municipal garage. This gives five lines in this building which could quickly bring the fire under control. At the same time it is possible to shift two of the lines on top of the municipal garage to exposures to the garage if necessary.

Two heavy lines are already operating on the three story frame hay and feed warehouse and these will be able to prevent fire from spreading across Houghson Street and at the same time keep the fire fairly well dampened down so that it will not extend to exposed buildings.

The two lines operating from Engine Co. No. 7 at hydrant No. 4 not only can cover the exposures across Houghson Street but can be brought into play in covering the municipal garage and operating on the hay and feed warehouse fire, if necessary.

It is believed this latter layout of apparatus affords a little bit better distribution of lines and should make the handling of the fire a little more prompt than the arrangement followed by the officer in command.

It may be said, at this point, that the handling of this fire was well done considering the serious exposures on all sides and the very excellent manner in which the department held the fire from spreading once the companies got into operation.

Chief Pitt, of Middletown, Honored

Fitting tribute for the fifty years service rendered his city as a firefighter was paid to Chief George S. Pitt of the Middletown, Conn., department at a testimonial dinner at fire headquarters. One hundred members of the paid and volunteer force, together with Mayor Frederick J. Bielefield and members of the fire committee of the Board of Aldermen, gathered to do him honor.

Chief George S. Pitt

He was presented with a purse of $200 from his brother firemen and by a gift of a new Buick coupe, fully equipped, from a group of citizens. Greatly moved by this display of thoughtfulness and appreciation, Chief Pitt accepted the gifts in his characteristic quiet manner.

Seated at the speakers' table were Chief Pitt, First Assistant Chief Daniel Daley, Mayor Frederick J. Bielefield, Fire Commissioners D. A. Baldwin, Michael A. Brown, Charles A. Chafee, Ex-Mayor John W. Rogers, Police Chief Charles A. Anderson.

Toastmaster Daley opened the program lauded the chief. "He's a man we all look up to love," said Mr. Daley.

Henry P. Bliss, one of the old time firefighters, reviewed the chief's career in brief form and surprised him with the gift of gold, representing "golden years of golden faithfulness."

Chief Pitt in his response told of the early days of fire fighting in Middletown when he joined the Douglas Hose Company in 1877 at the age of 18 years. As chief of the department in that city he is the only permanent chief that Middletown ever had.

The Middletown Press, speaking editorially on Chief Pitt's fiftieth anniversary, paid a glowing tribute to him. In part the Press said:

"For fifty years, night and day, he has been at the call of the community, ready to risk life itself if duty called.

"Fire department service is vital. Through it the safety of life and property is involved. It is the most taxing of any public department and the risks are around in all directions. No fireman looking at the sunrise but knows that before another is due, the call may come to him to face death in one of its cruelist forms. The records everywhere tell of heroic sacrifice. This is something no community should ever forget.

T. F. MAGNER.

Runs Into Cloud to Put Out Fire

New means of extinguishing fire have been revealed by Lieut. Emilio Carranza who made the first non-stop flight from Mexico City to Juarez. The one weak point of the plan is that the arrangement is not always dependable.

While flying over an isolated section after he had covered about half of the 1,200 miles from Mexico City, a wing of his plane in which 400 liters of gasoline was stored, caught fire. As Lieut. Carranza prepared to use his parachute, he noticed a black gloud indicating a rainstorm was in progress a short distance off his course. He headed for the cloud and the rain extinguished the fire.

Many Have National Standard Thread—About forty per cent of total number of fire protected cities in the United States have adopted the National standard thread for fire hose and hydrants.

WITH THE EDITOR

Uniform Traffic Laws

A step in the right direction on the vexing problem of traffic regulation was taken when, in 1926, the National Conference on Street and Highway Safety formed a committee consisting of seventy members of the conference to consider the subject of uniform traffic laws for all of the states. That there must be a certain amount of latitude in such laws, in order to conform to the varying local conditions, is recognized. The committee, therefore, in its subsequent work, has endeavored to discover where substantial uniformity is desirable and where flexibility should be provided.

In order to finally determine this matter the committee will be divided into six sub-committees, covering all branches of the subject of traffic control, and after all of these phases have been thoroughly investigated by the various sub-committees and digested by the main body, a model ordinance will be formulated, calculated to cover the entire field of traffic control.

It would seem, in considering this matter, that one of the sub-committees could well have been devoted entirely to the matter of laws and regulations governing the movement of motor vehicles at the time of an alarm of fire or during the progress of the fire. This is one of the most pressing and, at the same time, most troublesome problems that those in charge of the regulation of traffic have to deal with. It touches many of the various phases of traffic regulation, such as speed, interference with fire apparatus, parking, pausing during the passage of apparatus, etc.

Probably, it was the intention of the formulators of these various committees that each should consider the fire problem in relation to the other allied subjects, as they came up. But the problem is so complex and at the same time so pressing, that it would have been better for one committee to have devoted all of its attention to the matter. This committee, then, could easily have coordinated its efforts so that they would not in any way have clashed with the work of other committees.

Under the present arrangement, dividing the subject of traffic control in relation to the fire apparatus and the problem of fire-fighting into several groups, it is not known whether the committees have arranged to consult with the various fire chiefs interested, but it is to be presumed that they have, for otherwise an apportunity would be missed to make such a model regulation as is proposed as near perfect as possible. Without the assistance of the fire chief the best results in traffic regulation in time of fire cannot be attained.

However, even under the present arrangement of committees, much will be accomplished, and the result, if the matter is gone about in the right way, should be the formulation of a very useful model ordinance, upon which traffic regulations as nearly uniform as possible in the complex conditions prevailing may be based.

Foremost Servants of the People

Firemen today are more than fire-fighters or fire-preventionists—they are organized to serve the people in times of need.

When the storm broke with all its fury in St. Louis, men were needed and they were needed quickly. Men were needed to replace the open gaps in the fire alarm system. Men were needed to search for the buried. Men were needed to alleviate the sufferings.

Although about half of the force were off duty at the time, they answered a radio call for help. They did more than that. They remained on the job, sacrificing their days off, until their services were no longer required or until other agencies were organized to carry on the work.

When duty calls, it matters not if there is a fire, the fire service is the first to say, "Ready." And generally it is the organization that sees the task through.

Years ago, when a bomb wrecked part of the Wall Street section in New York City, it was the firemen who took care of the dead, aided the policemen in patroling the district, and the doctors in administering to the injured.

When men are trapped by falling girders, children caught in tight places while at play or life placed in jeopardy, it is the fire department that is called to render service.

Few realize that they have so catholic a service for doing good. Truly firemen may be called, "The Servants of the People."

An Asinine Test

Of all asinine and dangerous tests, the following, as described in a circular sent out as advertising by a manufacturer of a fire detecting system, certainly takes the palm. The double post card circular put out by this concern is headed: "Starts Blaze in Hospital!" and there follows on the second page a quotation from a local newspaper, describing the test as follows:

FIRE INSPECTOR STARTS BLAZE IN HOSPITAL, ALARM TELLS OF DEED

They started the fire with three helpless, new-born babes in one adjoining room and six bed-ridden patients in another. And not one of the group, which included a fire inspector, raised a hand to stop the blaze, which was set in the dining room of the —— Private Hospital yesterday.

As a matter of fact, it was the fire inspector who touched the match to the big tray of alcohol of the wood variety.

A minute, fifteen seconds after the first blotch of flame leaped

up, the fire gong sounded its ominous warning, the one dreaded noise of the hospital. Yet no one moved. Rather, broad grins of satisfaction spread over the features of those who watched this bold incendiarism.

It was a test of a new wiring system, installed throughout the building as a precautionary measure urged for such institutions by Building Inspector ——. Whenever the temperature of any room reaches 160 degrees, the alarm is automatically turned in, and it was under the supervision of Inspector —— and —— ——, structural engineer Department of Public Safety, that the test was made.

No doubt, in making a test of this kind, there was a certain straining after realism. Realism in such a test is, of course, desirable, but that is no excuse for any one adopting a plan which contained gruesome possibilities in case of the slightest hitch in the proceedings. And especially is it no excuse for the authorities of a hospital permitting such a test with "three helpless, new born babes in one adjoining room and six bedridden patients in another."

Just consider the results if anything had gone wrong with this test! Suppose that some one had tipped over the tray containing the burning alcohol; that the device or some vital part of it had gone wrong at the crucial moment — what was there to prevent serious loss of life among the helpless human beings so unnecessarily exposed to this terrible risk?

The circular itself contains a sinister suggestion to the unwary. It is like suggesting to the housewife that she start her kitchen fire with kerosene in order to hurry matters; that a fire department start a blaze in a building for the practice in extinguishing it. Either suggestion would contain as great an element of safety or common-sense as the plan of setting fire to a large pan of wood alcohol in a hospital to show that nothing would go wrong with the device intended to disclose the fire.

New Orleans Has Well Trained Band

Chief John M. Evans, head of the fire department of New Orleans, La., and the other members of the service, are proud of the fire department band consisting of thirty-five members.

There are three musical organizations in the department—a concert band, a small symphony orchestra and a saxaphone quartet. Frederick H. Wood is the bandmaster and has served in this capacity for the past year. He is a private musician who devotes eight hours of his time a day to this work and his studio is located in one of the engine houses.

New Orleans Fire Department Band

This is the only bona fide municipal band in the city as the musical unit of the police department depends in a large measure on talent outside of the uniformed forces. The firemen's band, however, is made up entirely of firemen. The city pays all the expenses incidental to the band, furnishes the men with instruments, music and so forth.

The men take their lessons on the city's time, but owing to the two-platoon system, they sacrifice part of their own time for this work. In fact the men seem willing to do this in return for the musical instruction. The band has a private fund maintained by the monthly payment of dues by the musicians. This fund is used only to buy refreshments and for entertainment of the band.

The firemen's band plays at all civic parades and functions, funerals, park concerts, and gives frequent concerts at local hospitals, parks and over the radio. Chief Evans is an ardent booster for the band and is very much concerned over the welfare of the bandsmen.

Special Type Cars Used by Boston Chiefs

District chiefs in Boston, Mass., carry a large amount of equipment in the cars with which they answer fire alarms.

The Chandler automobiles are a special sedan model and carry the following fire tools in the rear compartment; one Callahan

Equipment Carried in District Chief's Car

L. to r. Chauffeur John T. Howard and District Chief M. J. Teehan of Boston.

door opener, one mall, one hack saw, one elevator jack, three elevator wedges, two jack bars, three cold chisels, one crow bar, one pair bolt and wire cutters, three hydrant wrenches, one life line, one tow line, six gas masks, boxes, and canisters, six extra canisters, one pair of rubber gloves, one fire axe, two foam type extinguishers, one blanket, one length of ¾ inch hose, one chemical play pipe, one set of keyhole saws, one carbide lamp, one rip saw, one Pyrene extinguisher, one soda and acid extinguisher, one soda and acid recharge, one 2½ by ¾ inch reducer, one chemical hose spanner, and one duplex folding pail.

Fire Commissioner Eugene C. Hultman and Chief Daniel F. Sennott believe that the idea of having these tools in the district chiefs' cars will prove an aid in emergencies that may come up in answering telephone alarms or in cases where truck companies may be delayed in reaching the scene of a fire.

In many cities hand extinguishers are carried in the chief's car, but the extensive equipment adopted by the Boston authorities for use in the officers cars is an entirely new and somewhat novel experiment.

HARRY BELKNAP.

Election Money Pays for Truck

Fire apparatus is considered of far more importance in Golden, Col., than a municipal election.

In order to save on city expenses so that there would be money available with which to purchase fire apparatus, it was decided to forego an election. The volunteer firemen had petitioned that the city sacrifice the election and Mayor Jomes and the council agreed with the plan.

In celebration of the new equipment, the fire department held open house in the remodeled fire station.

Hightstown, N. J., Erecting Station—A $40,000 fire station is being erected in Hightstown, N. J.

QUESTIONS AND ANSWERS

Conducted by FRED SHEPPERD, B. Sc., M. E.

"He that questioneth much shall learn much"—BACON

NOTE—Readers of FIRE ENGINEERING are invited to send in questions, which will be answered in the order received. Names are omitted from questions unless otherwise specified.

The Old Puzzle Bobs Up Again

To the Editor:

Several weeks ago I became interested in a puzzle shown me by representatives of the local fire department which appeared in your magazine quite some time ago. There seems to be no one in this town who has been able to solve it so I am taking the liberty of writing you in the hopes of getting a solution from you.

The puzzle is one in which the puzzler is required to connect nine pipe or hose lines from three hydrants to three houses without crossing any of them. Each hydrant has three outlets, one of which must be connected to each of the three houses. When the problem is completed there are three lines on each house, each line coming from a different hydrant.

I would appreciate most sincerely the solution if it is possible for you to send it to me.

A. P. W.

Answer: So far as the Editor has been able to determine, there is no solution for the above problem. Two solutions have been offered which might be construed as fitting up the problem. One is to pass one line over the top of the hydrant and the other solution is to pass one of the lines through one of the houses. It is believed, however, that both of these suggestions are beyond the bounds of the problem as originally framed and are therefore not given credit as solving the problem.

If you are able to work it out, the Editor would like very much to have a copy of your solution.

Why Sulphuric Acid Disappears

To the Editor:

Can you enlighten me on the following:

I have asked several expert battery men what becomes of the sulphuric acid in a battery that is run down. For example, if you take and charge a new battery with new solution, say Sp. Gr. 1.250 or (C. P. sulphuric acid 1850 and distilled water) to above gravity then insert a charge into same and bring gravity up to 1.280 (via charging).

Allow this to discharge and you will have a reading far below 1.100. Am told that acid is absorbed by plates. Is this true? If so, how is it that you can take C. P. sulphuric acid 1.850 and dip plates into same, absorbing total amount plates can hold and insert into a battery, then add distilled water to cover plates, insert charge and you will not attain a Sp. Gr. of over 1.100, and furthermore if a quantity of sulphuric acid 1.250 is placed in an open vessel and allowed to evaporate the Sp. Gr. of same will increase according to amount of water evaporated. Am I right?

As I understand it the sulphuric acid added to distilled water to attain the gravity of 1.250 does not need any additional acid to maintain or hold this gravity on evaporation; this is the reason battery people instruct battery owners not to add any additional acid.

What becomes of the sulphuric acid in a discharging battery that has not been lost or spilled?

Yours very truly,

M. F.,
Linden, N. J.

Answer. The active material of the lead storage battery is lead peroxide (PbO_2) on the positive plate, or electrode, and finely divided, or sponge lead (Pb), on the negative plate. The plates are immersed in a solution of sulphuric acid and water (H_2SO_4 and H_2O) called electrolyte. On discharge of the battery, both these active materials are quantitatively converted into lead sulphate ($PbSO_4$) at the expense of the acid radical of the electrolyte and with the formation of water. Precisely the reverse action takes place upon discharge of the battery and these reactions may be represented by the following chemical equations:

Reaction at positive plate: $PbO_2 + H_2SO_4 = PbSO_4 + H_2O + O$
Reaction of negative plate: $Pb + H_2SO_4 = PbSO_4 + 2H$
Combined reaction of positive and negative plates:

$$PbO_2 + Pb + 2H_2SO_4 = 2PbSO_4 + 2H_2O$$

Eq. (6), read from left to right, is the equation of discharge; read from right to left shows the reactions during charge. The above reactions are those which normally take place. If impurities are present either in the plates themselves or in the electrolyte, these normal reactions may be departed from.

To one not familiar with chemistry, the above formulas or reactions would not mean much. In plain English here is what happens when batteries are discharged. Sulphuric acid is made up of hydrogen, sulphur and oxygen. When the battery is discharged the sulphur combines with the lead peroxide at the positive plate to form lead sulphate, which reaction also takes some of the oxygen from the lead peroxide. This same reaction causes the hydrogen in the sulphuric acid to combine with oxygen giving water with a surplus of free oxygen.

At the negative plate we have plain lead and sulphuric acid. When the reaction takes place, the lead combines with the sulphur and oxygen of the sulphuric acid giving lead sulphate and the hydrogen in the sulphuric acid is set free, this hydrogen passing off from the battery in the form of gas. Thus the sulphuric acid is broken up into its elements and these elements are combined with the metals on the two electrodes and with the water as well. The hydrogen and oxygen which are set free by the reaction at both the positive and negative plates pass off in the form of gas as noted above. This reduction of hydrogen and oxygen is nothing more than a reduction in the amount of pure water present as hydrogen combined with oxygen is water. That explains why water has to be added more frequently to batteries which are being rapidly charged than ones which are standing idle. The recharging is precisely the reverse process to that described above. At the positive plate oxygen (taken from the water) plus water plus lead sulphate gives lead peroxide and sulphuric acid, while at the negative plate the lead sulphate and hydrogen taken from the water gives in turn pure lead and sulphuric acid in solution.

There is no absorption of acid by the plates as you have been informed.

Sprinkler Systems and Cigarettes

To the Editor:

Will you kindly answer the following questions in an early issue of FIRE ENGINEERING? The first question was asked in the last batallion chiefs' examination in Los Angeles.

Question: Explain in detail the modern sprinkler systems as used today.

The second question is one over which we have had quite a bit of controversy. It is a question which originated among the boys in the station.

Question: Has it ever been determined by actual tests whether or not cigarettes are the cause of as many fires as are laid to them and do the conditions have to be perfect to cause a fire from a cigarette in the following: grass, brush, rubbish, wood, and shaving or sawdust, or is it dangerous at any time for a cigarette to come in contact with the above?

Respectfully yours,

R. W. A.

Answer 1. There are three types of sprinkler systems commonly employed and are as follows: First, the automatic wet pipe system in which all pipes and sprinkler heads are at all times filled with water. The fusing of a head due to the presence of heat from a fire or other source releases the water directly upon the fire.

The water supply for such a system may be secured from direct connection to public mains, or from private reservoir or standpipe, or gravity tank, air pressure tank, or from pump taking water from any of the above sources.

Two independent water supplies are essential for a modern sprinkler system so that one will always be in service.

For illustration purposes let us consider a system which is supplied by a tank and also from the city mains. Then starting from the city main the water would pass through a valve, then a fire service meter; then through another check valve, another gate valve, and again pass into the bottom of the gravity tank through both gate valve and check valve. The pressure tank and the fire pump would be alternate sources of supply.

The sprinkler system is usually equipped with a fire department connection in the form of a siamese placed above the sidewalk at the height of about two feet just in front of the building.

The size of the pipe installed to feed the sprinkler heads depends upon the number of sprinkler heads to be supplied by the system. These sprinkler heads are small nozzles with valves held closed by fusible links. Upon being exposed to heat, these links melt and the sprinkler heads automatically open and discharge water onto the fire.

Up-to-date sprinkler systems are usually equipped with alarm apparatus which transmits a fire alarm when water is caused to flow in the piping by a sprinkler head opening.

Second, we have the automatic dry pipe system, in which the pipes and sprinkler heads are filled with compressed air and the water supply is operated by a dry pipe valve. In this system when a head is fused by heat the air is released, the air pressure in the pipe drops, and the dry valve operates, sending water through the piping up to the open head.

Third, there is the sypho-chemical sprinkler system which is an automatic extinguishing device designed for moderate areas and to extinguish fires that are subject to control by three or less sprinklers that are supplied by 200 gallons of liquid.

It consists, in brief, of a soda and acid chemical tank or engine of around 200 gallons capacity connected to a system of pipes and sprinklers arranged in a manner similar to a standard automatic sprinkler system; an alarm bell; a combined shut-off and check valve; and an expansion chamber located at the top of the riser above the highest sprinkler.

The tank is filled with a solution of bi-carbonate of soda such as is used in a soda and acid hand extinguisher. The acid charge is located in a dome attached to the tank and so arranged that the acid can be syphoned into the tank when needed. A small suction pipe extends from the acid dome to the extension chamber at the top of the riser. The piping, down to a check valve in the riser near the tank, is filled with a non-freezing solution of calcium chloride.

When a fire occurs a sprinkler head opens and the calcium chloride solution is discharged through the open head or heads. This lowers the height of liquid in the main riser and thus forms a partial vacuum in the expansion chamber. This loss of pressure or partial vacuum is transmitted to the acid dome through the small pipe, thus starting the cycles of syphonic action in the acid. The acid then flows into the tank forming carbonic acid gas, which soon develops a pressure of about 100 pounds and discharges the contents of the tank through the riser and opened sprinklers.

This system does not come under the heading "automatic," but is a device for automatically extinguishing fires, comprising features of the automatic sprinkler system as well as those of the chemical extinguisher.

Answer 2. No, it has never been determined by actual test whether or not cigarettes are the cause of as many fires as are assigned to them. The cigarette has been found in the act of starting so many fires that they take the blame for many fires which might have been of other than cigarette origin.

A lighted cigarette will readily start fire in grass where it is matted and thoroughly dry. It will also start fire in brush, particularly where there is a bed of dry leaves such as are found beneath brush, late in the fall. As to starting fire in rubbish, that depends entirely upon the type of rubbish. It is not likely that cigarettes would cause fire in wood unless shavings or sawdust are present. Certainly, however, cigarettes will start fires in shavings and sawdust, particularly where there is a slight breeze blowing, sufficient to fan the glowing particles into a flame. To demonstrate the last statement, here is a little experiment worth trying. Place a cigarette, well lighted, in a pile of dry, fine shavings in a doorway where there is a marked draft. Then note carefully the progress of the fire. You will find that inside of twenty minutes, if conditions are right, a flame will burst forth. Naturally the experiment should not be tried where the fire may gain headway in materials not intended to be included in the demonstration.

Officers, New Hampshire Firemen

The officers elected at the recent convention held in Somersworth, N. H., of the New Hampshire State Firemen's Association, held at Somersworth, N. H., were as follows:

President—Edward L. Flanagan, Somersworth.
Secretary—Oscar P. Stone, Manchester.
Treasurer—A. C. Melendy, Nashua.
First Vice-President—Guy E. Lewis, Nashua.
Second Vice-President—Harry E. Connell, Hudson.
Third Vice-President—Jeremiah J. Casey, Milford.
Fourth Vice-President—Walter S. Edmunds, Pembroke.
Fifth Vice-President—William A. King, Concord.
Sixth Vice-President—Harry E. Montgomery, Pittsfield.
Sergeant-At-Arms—Perley G. Field.
Executive Committee—William C. Green, Concord, one year; Patrick J. Kennedy, Exeter, one year; William F. Woods, Portsmouth, two years; Albert W. Clark, Laconia, two years; Clarence D. Fay, Hinsdale, three years; Carroll M. Nash, Dover, three years.

Lutkey, Chief of Oakland, Cal.

William G. Lutkey has been appointed chief of the Oakland, Cal., fire department.

He joined the fire department in 1901 as a hoseman of Chemical No. 1. On January 8, 1902, he was promoted to driver of this company and on July 1, 1909, he was advanced to captain. Promotion to battalion chief followed on September 20, 1913. Mr. Lutkey was made assistant chief on July 1, 1921, and his present appointment came on July 11, 1927.

Chief Lutkey is now fifty years old and has been a member of the department for twenty-six years. He is a Mason and a member of the Shrine.

Chief William G. Lutkey, Oakland, Cal.

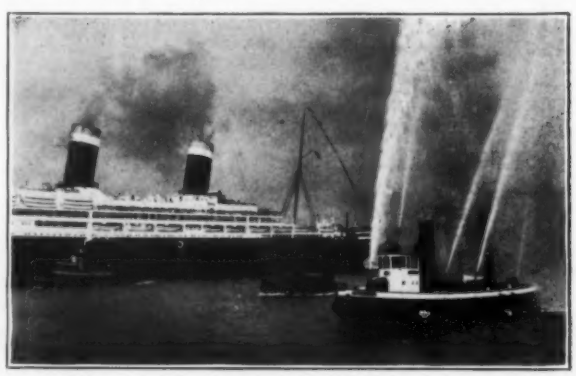
Captain Higgs Promoted

Captain Arthur Higgs has been named to take charge of the fire prevention bureau of Berkeley, Cal. The work was formerly taken care of by Assistant Chief William Meinheit.

Members of the fire prevention bureau are ready to go out at any time of the day or night to preach the gospel of safety from fires.

Each fire company details one officer each month to make a study of fire prevention work and fire hazards in his vicinity. The reports are forwarded to the bureau which in turn conducts an investigation.

Iowa Firemen to Meet at Independence—The Iowa State Firemen's Association has selected Independence as the place where the 1928 convention will be held. The officers of the association are Charles Luppold, Red Oak, president; L. R. Morris, Ames, W. A. McKee, Atlantic and G. Bander Rorde, Milford, vice presidents; E. E. Parsons, Marion, secretary and J. J. Lynch, Vinton, treasurer.



To the Tune of "How Dry I Am"

The 1,700 World War veterans who left New York city on the Leviathan for the American Legion convention in Paris were treated to this long-remembered fire boat display in the lower New York ba . The fire boat is the Thomas Willett, one of the many in service about New York's water front.

Smoking Ruins of Revere Beach Amusement Resort, Showing the Buildings Saved by the Fire Department

AMUSEMENT RESORT FIRE CAUSED BY CIGARETTE DROPPED IN REST ROOM

Revere Beach, Mass., Is Visited by Bad Blaze—Flimsy Structures Make Food for Quick Burning Fire

THE fire hazard of an amusement resort with its flimsy type of construction located adjacent to a city was demonstrated on October 9 when flames, which caused damage of $300,000 at Revere Beach, Mass., threatened the destruction of the city by scattering embers for a distance of a mile. The exterior of the clubhouse of the Revere Post, Veterans of Foreign Wars, was ignited, but this blaze was extinguished before any serious damage resulted. The dampness of the weather prevented sparks from igniting many roofs on which they landed.

The Revere Fire Department, under Chief Thomas J. McCarrick, was aided by firemen and apparatus from Chelsea, Everett, Winthrop, and Lynn. Boston sent engines to "cover in" at vacant firehouses in Everett and Chelsea.

The fire was discovered at 4:30 a. m. in the Nautical Gardens, a large frame and stucco building containing a dance hall on the upper floor, check rooms on the mezzanine floor, and "The Pit" on the street floor and basement. The flames were fanned by a high wind and nothing was left of the Nautical Gardens and Pit except a few crumbling sections of wall. Fourteen other amusement concessions were damaged, many of them by water with which they were wet down to save them from the fire. Efficient work by the firemen and a brick wall were the factors which prevented the flames from sweeping the mile long beach front. Abundant water was obtainable through new 12-inch mains which were installed only two months ago.

It is believed that the fire was caused by a cigarette dropped in one of the rest rooms as a dance had been held in the building ending at 11:30. During the progress of the fire the police received word that liquor was being landed from launches at Beachmont and this gave rise to rumors that the fire might have been set to divert attention from the section of the city where the liquor was brought in.

The Nautical Gardens and Pit were 3 stories in height, 200 feet long and 100 feet deep. Construction was of heavy pine with stucco exterior. The building was put up in 1919 to replace an old structure that was burned in 1918 and which caused the death of three firemen.

In the present fire no one was seriously injured although many firemen suffered from smoke and minor cuts and a Chelsea fireman was struck by the car of Chief David M. Hudson, of the Chelsea fire department, and received bruises and shock.

Motor pumping engines took water from hydrants along the boulevard and on Ocean Avenue. More than twenty streams were in action at once and several wagon guns were used effectively. Falling wires constituted a menace until power was shut off the entire beach section.

The fire was very spectacular and the illumination from the leaping flames could be seen for miles around. The fire wall which aided in checking the spread of the flames was 35 feet high, 4 feet thick, and 106 feet in length.

Garden hose and buckets were utilized in wetting down roofs by the owners of scores of residences menaced by flying embers. More than 100 families were aroused by the police and were prepared to flee.

The work of the firemen under direction of Chief McCarrick, who was appointed less than a year ago and is one of the youngest permanent fire chiefs in New England, was highly praised.

HARRY BELKNAP.

MANY HANDICAPS ENCOUNTERED BY FIREMEN IN BIG PLANT BLAZE

Broken Sprinkler Riser, Hydrants Out of Order and Misplaced and Location of Buildings All Work Against Quincy Fire Department

FIRE, believed to have started in a coal bin, or in one of two large cupolas, early on the morning of Sept. 23, did damage estimated at $350,000 to the plant of the Excelsior Stove and Manufacturing Company, at Quincy, Ill., one of the largest of its kind in the middle west.

The fire was one of the most difficult the department has had to battle, because of its location on the banks of the Mississippi River, in the heart of a manufacturing district. It was fraught with a series of interruptions and led to a rigid investigation by fire department officials and the fire commissioners.

The blaze was discovered at 2:27 a. m. by the night watchman, who notified Engine Company 4, three blocks from the plant. The company was told a fire was burning in the coal bin.

When the crew arrived they discovered the fire was burning fiercely and sent in a general alarm, which brought First Assistant Laurich, in charge of the department, during the absence of Chief Edgar Yates, who was out of the city. Third Assistant Vosse also responded. A second alarm followed shortly after 2:30 and a third a few minutes later.

The fire destroyed the molding shop, a two story, brick, wood and galvanized iron structure, a large two story carpenter shop, and leaped across a passageway to a five-story brick warehouse, three blocks long, and a quarter of a block wide.

Because of lack of room to fight the fire on the west side—the buildings stand on the edge of the river—lines had to be dragged through the warehouse, bridges made of ladders and the fire fought from the north and south ends.

As the flames continued to spread and leaped to the fourth and fifth stories of the main structure, a riser pipe of the sprinkler system broke. The six inch pipe was a feeder from the large main to which hydrants were attached and made plug streams practically useless. Lines from pumpers were not affected.

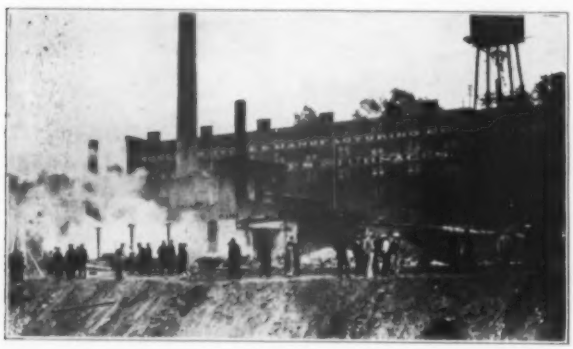
Firemen found plugs in the vicinity of the plant inaccessible

or out of order. One plug across from the fire was found to have been tampered with. When the valve was opened no water could be secured. Other plugs were in such positions that pumpers could not be attached. Long leads of hose had to be attached to other hydrants in the vicinity, causing serious delay.

During a critical period of the fire a 1,000 gallon pumper burned out a bearing rendering it useless, along with three lines it was carrying.

Upon complaints made to him, Chief Yates ordered re-location of six hydrants and recommended the immediate purchase of another pumper.

At the meeting of the city council on Sept. 26, a report of the



Smoking Ruins of the Excelsior Stove Factory, Quincy, Ill., Taken from Boat in River. Warehouse and Main Buildings in Rear had Fourth and Fifth Stories Gutted

fire commissioners concurred in his recommendation and authorized steps to be taken to secure another machine.

Equipment in service at the fire included five motor pumpers, one steamer, one aerial ladder truck, one combination and one turret wagon. Four assistant chiefs and 70 firemen fought the blaze. Eleven streams were played on the fire, and 11,000 feet of hose was used.

WHAT'S BURNING

THE following list includes fires of $25,000 loss and over in the United States and Canada, for the periods designated in the headings. These figures, compiled from telegraphic reports, are based on estimates made at the time, and are subject to later investigation and consequent revision. Taken as a whole, however, they give an approximately correct view of the losses incurred. The figures represent loss in thousands.

Week Ending October 7

HAMILTON, ONT.—Grandstand, Hamilton Amateur Athletic Assn. 80
CANANDAGUA, N. Y.—Barn of M. N. O'Brien, West Lake Rd. 50
NORTH DARTMOUTH, MASS.— Icehouse, A. Lagasse, Lake Noquocroke 40
MINNEAPOLIS, MINN.—Plant of Massey Concrete Products Co. 165
DAYTON, OHIO.—Stables of Dayton Country Club..... 250
POINTE AU BARIL, ONT.—Bellevue Hotel destroyed..... 165
SHELBURNE, VT.—Barns of Lawrence Hayes destroyed..... 30
TUPELO, MISS.—Domitory of Tupelo Military Institute..... 30
TOLEDO, OHIO.—Shuer-Hattner Iron & Steel Co..... 30
TOLEDO, OHIO.—Plant of France Slag Co. & adj. property.. 65
WAUKESHA, WISC.—Barn and house of Wence Bunyvatz, destroyed 25
QUINCY, ILL.—Shops of Excelsior Stove Co..... 250
CHATSWORTH, GA.—Warehouse and store of M. C. Jefferson. 25
FRENCH LICK, IND.—Barns and shops of J. Robinson Shows 25
MADISONVILLE, KY.—Property of Sunlight Mining Co..... 100
VANCOUVER, B. C.—Welch Candy Store, N. Pacific Bldg..... 40
ITHACA, N. Y.—Bldg. occupied by R. H. Wool Bakery..... 40
REDWOOD CITY, CAL.—Shops and newspaper office destroyed. 30
OTTAWA, ONT.—Warehouse of A. J. Freiman, Ltd..... 80
JASPER, TEX.—Jasper Furniture Co. Bldg..... 40
BOSTON, MASS.—Residences on Woodlawn and Tower Sts.... 40
CHICAGO, ILL.—Bldg. of Fuji Trading Company..... 45
KINGSBURY, CALIF.—Alamo Packing House, Golden State Highway 25
JACKSONVILLE, FLA.—Bldg. at Forsyth & Jefferson Sts.... 210
CHATSWORTH, GA.—M. D. Jefferson & Bradley Company stores 35
MINNEAPOLIS, MINN.—Minneapolis Linoleum Co. and adjacent property 35
GRAY, ME.—Property of B. F. Skillings and C. B. Hunt.... 25
LOUISVILLE, KY.—General Service Garage damaged..... 25
PARIS, ILL.—Four large barns destroyed..... 80
LITTLETON, N. H.—Business establishments, Union Hall Block 125
JOHNSTOWN, N. Y.—Leather mill of L. Argersinger & Sons.... 125
Property damage amounting to.....
CHELSEA, MASS.—Mill of Boston Blacking Co. damaged..... 40

Week Ending October 14

BOGALUSA, LA.—Warehouse of M. Marx, Ontario St..... 65
ARITON, ALA.—Business establishments damaged..... 40
CHICAGO, ILL.—Gas filling station and adj. property, Jackson Avenue..... 80
CHICAGO, ILL.—Pushman's Rug Shop, S. Wabash Avenue... 45
REVERE, MASS.—Section of Amusement Park..... 255
NASHUA, N. H.—Business Structure, Montcalm Block..... 67
GREENWOOD, IND.—Gymnasium destroyed..... 25
LEWISTON, ME.—Grain & Flour Mill, J. B. Ham Co., destroyed 210
ELDORADO, ARK.—Stills of Lion Oil Refining Co., destroyed. 80
OROVILLE, CAL.—Feather River Pine Mills and adj. property 1,700
MINEOLA, L. I., N. Y.—Krug's Hotel, Jericho Turnpike, destroyed 25
UNIONVILLE, N. Y.—American Silk Label Mfg. Co., warehouse 35
MAMMOTH, UTAH—Mammoth Mine destroyed..... 60
CHICAGO, ILL.—Jackson-Kedzie Motor Sales Co. and adj. property 35
GLOVERSVILLE, N. Y.—Leonard Argersinger & Sons and adj. property 125
EAST LIVERPOOL, OHIO—David Southall garage..... 35
CHICAGO, ILL.—Pushman Brothers, S. Wabash Ave. damaged 40
ROANOKE, VA.—Brick Bldg. Philip Levy Furniture Co..... 125
BEMIDJI, CALIF.—Bemidji Hardware Co. Bldg. and stock... 80
WOODLAND, CALIF.—River Farms Co. warehouse damaged.. 212
CIRCLEVILLE, OHIO—The Hosier Co. destroyed..... 35
WICKES, ARK.—Wonder State Lumber Co. plant destroyed... 25
DANVILLE, OHIO—Whipp Hotel destroyed..... 40
BOWIE TEX.—First Methodist Church..... 35
DORCHESTER, MASS.—C. H. Graves & Sons destroyed..... 65
MADOC, ONT., CANADA—Armstrong's Service Station and adj 25
DUNDALK, MD.—Yacht of Martin Goldberg destroyed..... 60
ROCHESTER, N. Y.—Rochester Upholstering Co. destroyed... 220
PATERSON, N. J.—Aronowitz Bros. Storeroom damaged..... 25
PAUGAN FALLS, QUE.—Eight houses and garage destroyed.. 40

Want Peter Walsh Kept in Boston

Both George W. Booth, chief engineer of the National Board of Fire Underwriters and Isaac Osgood, assistant manager of the Boston Board of Fire Underwriters, appeared before Eugene C. Hultman, Boston fire commissioner, to appeal that former chief Peter E. Walsh be permitted to continue as head of the fire prevention bureau for another two years. The conference lasted for an hour.

The city is debating whether Mr. Walsh should be allowed to continue his position as superintendent of fire prevention at a salary of $5,000 or be forced to go back to the pension roll at $2,500 a year.

Under the present arrangement Chief Walsh's pension is suspended while he is serving as superintendent of the fire prevention bureau. But if Mr. Walsh were to accept the position permanently after he has passed the civil service examination he would lose his long service record which obtained him his pension and he would be considered as a new employee on the city's payroll.

It was urged that Chief Walsh be allowed to continue as head of the fire prevention bureau so that he could establish the department on a permanent working basis.

Stamford, N. Y., Purchases Apparatus—Delivery is expected in November of the new fire apparatus ordered by Stamford, N. Y. This Catskill mountain village has placed the order with the Sanford Motor Company of Syracuse.

How a California Race Track Looked After a Big Fire
Ruins of the paddocks, stables and other buildings of the Tia Juana, Cal., Race Track, after it had been visited by a fire recently.

OF INTEREST TO VOLUNTEER FIRE DEPARTMENTS

Fireman Builds His Own Truck

The ingenuity and self-perseverance of Francis E. Ingals, a mechanically inclined volunteer fireman in the little shore town of Guilford, Conn., has brought the business of fire protection in his home town another step forward by the construction of his own fire apparatus. This he built to protect his twenty-five acres of land and beautiful homestead located on the road that winds its way over marshy land to Chaffinch Island.

The Ingals' apparatus is lettered "Chaffinch Island and Guilford Vol. Fire Dept." This was done, Ingals explained, to let the townfolks know that they could depend upon his services whenever he was needed to help at a fire.

It took Ingals about six months of his spare time away from his regular mechanical work as a builder of fishing boats to put the fire fighting apparatus together. He met with many obstacles at first but kept right on plugging away at his idea. One day recently he startled the residents of Guilford by wheeling up to a fire hydrant in the center of the town to demonstrate that he had accomplished his task and had a machine that would put out all the fires in the community.

Upper—Francis E. Ingals and the Pumper That He Built and Equipped Primarily to Protect His Property at Guilford, Conn. Right—Mr. Ingals and the Dog Duke That Has Been Trained to Climb Ladders. The Dog Is Always on the Apparatus When the Siren Calls the Volunteer Firemen to Respond to a Fire Alarm.

The new apparatus cost Ingals about $2,500 to build and it is the only one man owned piece of fire fighting apparatus in New England. It is built on a Diamond T chassis of 2½ ton weight. The pump, which is rated at 300 gallons per minute, was specially built for Ingals by the Waterous Company of St. Paul, Minn. There is space in the machine to carry 1,200 feet of 2½ inch hose. The machine also carries all other features that are found on factory-built fire apparatus.

One of the special arrangements on the pumper is the 110 volt, 1500 watt lighting plant which has three large flood lights for night illumination. The lighting plant, one of Kohler manufacture, aside from lighting the three flood lights, also furnishes current for the smaller lights about the machine. The power is generated from the engine motor.

The apparatus was built originally to use only in the event of a fire on the Ingals' property but in the spirit of helpfullness he answers all calls for fires in the town. He is in reality a full-fledged fire "fan." He has a large 110 volt siren installed on the roof of his workshop and an electrically controlled fire alarm box located in front of his garage.

In the event of a fire in the nearby vicinity Ingals is notified by the telephone company and in turn he sounds the siren by pulling the hook in the fire alarm box. This signal from the siren gives his brother volunteers in the immediate vicinity notification of a fire call and the volunteers wait for Ingals and his Chaffinch Island machine to come along and pick them up.

Ingals has had several offers to elect him chief of the volunteer firemen at Guilford but each time he declined.

"Duke," a playful, but quite intelligent English terrier, plays an important part in the fires at Guilford. "Duke" is owned by Ingals and is always in the seat when his master answers an alarm. The dog has been trained to climb ladders and run across the roof of one of the buildings adjoining the Ingals property. He reminds one of the old days of the faithful coach dog that ran ahead of the three-horse hitch to warn pedestrians that the horse-drawn apparatus was on its way down the street.

T. F. MAGNER.

Standards Planned for Small Hose

About forty per cent of the fire-protected cities and towns in the United States have already adopted and put into use the National (American) Standard for Screw Threads for Fire-Hose Couplings and, at the present time, in twenty-four states, the process of converting the existing equipment to the Standard dimensions is well organized.

This standard deals with the threaded parts of couplings from 2½ to 4½ inches and applies to the larger sizes of hose couplings used on fire lines outside and inside office and factory buildings. A further step has now been taken, according to an announcement made by the American Engineering Standards Committee, with the recent appointment of a representative special advisory committee for the proposed establishment of standards for small hose couplings which would complete this important piece of standardization work, extending it to sizes from ½ to 2 inches, as used in factories and office buildings.

Two requests bearing on the subject of standardizing the smaller sizes of screw threads for hose couplings have been officially presented to the A. E. S. C.; the one from the National Fire Protection Association and the other from the American Society of Mechanical Engineers. There are important differences, relating to the fineness of thread recommended and its consequent ability to withstand rough usage, between the recommendations of the Fire Protection Association and those of the National Screw Thread Commission. The bodies represented on this Committee are: A. E. S. C. Fire Protection Group; American Mining Congress; American Petroleum Institute; American Railway Association; American Society of Mechanical Engineers; International Assn. of Fire Engineers; Manufacturers Standardization Society of the Valves and Fittings Industry; National Screw Thread Commission and the Railway Fire Protection Association.

Entire Department Offered to City

Fire departments are a luxury that the mere private citizen can not afford. They can fool with the operation of gas companies, water works, and such organizations. But fire departments are out of the realm of ordinary amusements.

Fred Thomson, a motion picture actor residing in a section of Los Angeles, purchased a fire apparatus and other equipment incidental to the maintenance of a fire department so that he could protect his home and the property of others in the ridge overlooking Benedict Canyon.

But after he had organized his private department, he learned that he was liable for damages even while responding to a call to help his friends fight a fire. As much as the actor liked the thrill of playing with fire equipment, he had no desire to make himself liable for personal damages. He offered his entire department as a gift to the city. The fire commission has recommended that the city accept the equipment.

E. Springfield, Mass., to Have New Station—Contracts have been awarded for the construction of a new fire station in East Springfield, Mass. It will be built along the lines of a suburban station and the price is estimated at $40,000.

Fighting Fires Before They Occur

(*Continued from page* 1078)

stage, it is impossible to extinguish it and the pile burns down to a fringe of charred logs, as shown in the next picture.

Protection by Monitor Nozzles

Although automatic sprinklers cannot be utilized to protect this valuable log pile storage, as I have already indicated, the fire protection engineer has worked out a highly effective protection by means of monitor nozzles capable of concentrating powerful streams on any part of a pile. Fig. 7 shows the

Fig. 6. Burning Log Pile at Night

Ignited by sparks carried by a fifty-mile gale from a burning shingle mill a thousand feet away. Dry condition of wood allowed rapid spread of fire, unchecked by ordinary hose streams. This shows the importance of keeping log piles wet down in dry weather.

location of the log piles in relation to the mill, the subdivision of these piles to safe units with 100-foot clear space between, and the location of the monitor nozzles around the piles at intervals of about 150 to 200 feet. Hydrants are interspersed with the nozzles for supplementary protection.

Watchman Can Control System

If the watchman patrolling this yard should discover a fire, he could proceed instantly to one of these nozzles without having to call for help; and without spending any time whatever to lay hose, direct one of these nozzles toward the fire, and by merely opening a valve throw a powerful stream on the incipient fire in a moment or two. And then leaving this stream directed on the blaze, he could go to another nozzle and apply a second stream,

Fig. 7. A Deluge of Water from Monitor Nozzles

Nearly 5000 gallons a minute are being discharged through seven monitor nozzles with 1¾-inch outlets. Note that monitor nozzles are practically unattended. A large crew of men would be needed to handle the same amount of water from hose streams, and valuable time would be taken in laying the lines.

all within a very few moments. While his part in extinguishing this fire is a very important one, nevertheless the fire was actually fought beforehand, when the fire protection engineer developed this method of protection and the management installed it.

Location of the Nozzles

The next slides show close-up views of some of the individual nozzles, some of which are located at ground level and others on towers to reach over the sides of the pile which may be corded up because of limited yard room. You will note that the ends of some of the piles are provided with concrete barriers to define the clear spaces which should be maintained. Note also the clean conditions which prevail around the piles, and the concrete houses for the motors driving the conveyors, all with a view of reducing the fire hazard to a minimum. Fig. 7 shows a number of these powerful streams in action at the same time, supplied by centrifugal pumps of large capacity.

Chief Bogan Heads Louisiana Firemen

R. A. Bogan, chief of the Baton Rouge, La., fire department was elected president of the Louisiana State Firemen's Association at the annual convention held in Ponchatoula.

The other officers elected are as follows: Chief W. A. Blackwell, Ponchatoula, first vice-president; R. J. Montz of Thibodaux, second vice-president; A. J. Bethancourt, Houma, secretary, and A. A. Hanson was re-elected treasurer. Retiring president, J. Wesley Myles of Crowley was elected as a delegate to the next I. A. F. C. convention.

Sunday was the biggest day of the convention. There was a free barbecue at noon and a parade was held in the afternoon. The convention officially ended with a baseball game and a dance.

Opelousas was selected as the place for the 1928 convention. Jennings made a bid for the gathering but retired in favor of the city selected.

New Fire Prevention Poster

Chief Daniel F. Sennott, of the Boston, Mass., fire department, had a large and handsomely printed poster prepared for display during Fire Prevention Week. The poster, which was displayed in the window of a downtown department store, read as follows:

WHO COMES HERE?

I am more powerful than the combined armies of the world.

I have taken more lives than all the wars of the world.

I am more deadly than bullets, and I have wrecked more homes than the mightiest of siege guns.

I steal, in the United States alone, over five hundred million dollars each year.

I spare no one, and I find my victims among the rich and poor alike; the young and old; the strong and weak; widows and orphans know me.

I loom up to such proportions that I cast my shadow over every field of labor from the turning of the grindstone to the moving of every railroad train.

I massacre thousands upon thousands upon thousands of wage earners in a year.

I lurk in unseen places, and do most of my work silently.

You are warned against me, but you heed me not.

I am relentless; I am everywhere; in the home, in the factory and on the sea.

I bring suffering, degradation and death and few seek to avoid me.

I destroy, crush, maim, take all and give nothing.

I am your wost enemy.

I AM FIRE CAUSED BY CARELESSNESS.

Arrangements were made for officers of the fire department to visit the public schools during the week and give short talks on fire prevention.

Inspections were also arranged to cover every district of the city with especial care given to elimination of rubbish in cellars and backyards.

HARRY BELKNAP

Marlton, N. J., Awaits Fire Apparatus—Marlton, N. J., is expecting the early delivery of its fire apparatus. The order was placed about three months ago.

Tecumseh, Mich., to Answer Outside Calls—Companies in Tecumseh, Mich., will answer fire alarms from the rural districts in accordance with a rule just passed by the village council. Three hours after the ordinance was passed, the firemen answered a call for assistance from a nearby farm.

Boston Officers Must Search Fires—Deputy and district chiefs of the Boston, Mass., fire department have been instructed to use more care in searching for the cause of a fire and not to list the reason for the fire as "unknown" until after a most careful search had been made of the premises in which the fire had occurred.

Outside Officers Attend College

Four visiting fire officers are attending the fall session of the New York Fire College. They are taking the full six weeks course, attending the Fire College and the Drill School in the daytime, and responding to fires in the night time with some of New York's busiest fire companies.

Jackson, Miss., Fire Department is represented by Assistant Chief G. E. Taylor and Capt. F. L. Boteler. Chief Taylor is quartered with the Deputy Chief in charge of the 3rd Division which embraces the dry goods, hotel and shopping districts. The headquarters are on West 33rd street in H & L Co. 24, a block away from the Pennsylvania Railroad Terminal. Capt. Boteler is "rolling" with Engine Co. No. 1 on West 29th street near 7th avenue.

Visiting Fire Officers Obtain Instruction

Assistant Chief Dougherty, dean of the New York Fire College, is explaining the operation of a two-way gate valve. From left to right, Assistant Chief G. E. Taylor and Captain F. L. Boteler of Jackson, Miss., Chief Dougherty, Captain Theodore Karageorgheiff of Bulgaria and Lieutenant J. L. Croom of Wilmington, N. C.

From Wilmington, N. C., is Lieut. J. L. Croom. He is quartered at Engine Co. 14 on East 18th street near Union Square. This company is in the heart of the high pressure district.

From Bulgaria is Capt. Theodore Karageorgheiff who is taking up both police and fire matters. He has just completed a course in the New York Police Academy at Police Headquarters and is now making observations in the Fire Department. He is also taking a course in criminology at Columbia University. Capt. Karageorgheiff is not responding to fires. He is not a fireman, but an army officer and is spending his own time and money on his mission, although he came to Chief Kenlon at Fire Headquarters with very high recommendations from the Bulgarian Consul.

The three southern fire fighters are strictly on the job. The writer has been in their company somewhat and they are particularly impressed with the discipline of the New York Department. Chief Taylor, a former soldier, was with the A. E. F. and passed through the Port of New York on his way "over there." Lieut. Croom has been to New York previous to this visit but Capt. Boteler never saw the big town before.

The latter asked the writer one day—"How many people do you kill here a day in this maze of traffic?"

I told him that fire fighting in itself was not so much a problem as it was in getting to the fire.

They have embraced in their observations and studies all phases of the fire situation in the metropolis, and while much of the New York curriculum deals with situations which may never arise in their home communities, yet the principle or the foundation at least has been placed before them.

W. J. DALY.

Tulsa Has Unusually Low Fire Loss

Chief R. E. Pitts and the firemen of Tulsa, Okla., are happy over a new record that has been made in the local fire department history. A monthly fire loss of only $69.50 is something for which one can be proud.

In August, 1926, the fire loss for the month was $3,519 and for the same month in 1927 the loss was only $69.50. July just a month previous, had a loss of $3,813.

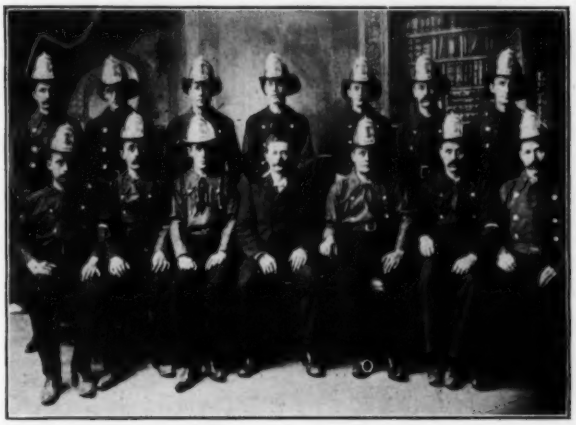
The property involved in fires during August of this year was $166,000 as compared with $524,824 in August, 1926, and $356,095 during July. 1927. There were 34 alarms during August as compared with 48 a year ago and 46 during the month of July, 1927. In falling to the extreme low figure during August the mark represents a decline from the average monthly loss in Tusla from fires of $3,500.

The biggest fire of the month was caused by leaving an electric iron on in a Tulsa home. The damage resulting amounted to $40. Seven of the small blazes reported during the month were caused by cigarettes, five by trash and three by defective wiring.

The report was compiled by R. W. Granger, secretary to the fire chief, who broadcast the report to members of the fire department.

Genesis of the Pirsch Trussed Ladder

Most all worthy things are developed from humble beginnings. A spilled bottle of dye on a window pane resulted in the manufacture of stained glass. The prick of a needle developed into the modern phonograph. And so the breaking of a ladder in the company of which Peter Pirsch was a member was the incentive for the patent trussed type of ladder.



Kenosha's Hook and Ladder Company in 1891, with Mr. Peter Pirsch in the Center of the Back Row.

The photograph was taken in 1891 and shows the Hook and Ladder Company of Kenosha, Wis., with Mr. Pirsch in the center of the back row.

While fighting a large hotel fire, one of the old type large fire department ladders carrying six men broke and the men with the hose were dropped to the ground. Seeing the need for stronger and lighter ladders, Mr. Pirsch devoted his time to the design of the trussed type ladder. The James S. Barr Hook and Ladder Company of Kenosha was the first to have a set of such ladders.

The old volunteer fire department system was abolished ten years ago in Kenosha and a paid fire department established. But many of the old timers still cherish the memories of the volunteer days.

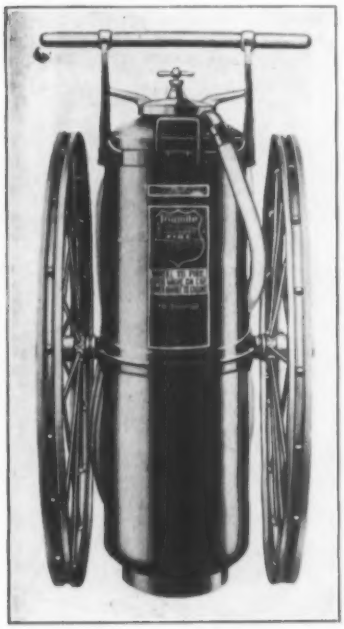
Atco, N. J., Receives New Fire Apparatus—New fire apparatus has been delivered to Atco, N. J.

Turlock, Cal., Pround of its New Fire Apparatus

A quadruple American-LaFrance fire apparatus has been delivered to Turlock, Cal., and the men are exceedingly proud of th ir equipment. The unit consists of a 750-gallon pump, and eighty-five-gallon booster tank, a 1,000-foot hose body and 235 feet of ladders. The municipality has already a 750-gallon pumper, and a 300-gallon pumper for rural calls. C. V. Lundhal is chief of the volunteer fire department that consists of thirty men.

New Fire Extinguisher Wheels

A built-up steel wheel with grooved convex tires is the latest development in wheels for fire extinguishers. They are made by French & Hecht of Davenport, Iowa, and Springfield, Ohio.



French & Hecht Wheels Used on Foamite Extinguishers

The illustration shows in a general way the steel spoke wheel with a steel hub which has a cast iron bearing box. The wheel illustrated is fifty inches in diameter with spokes 9/16 inch in diameter. The tire is grooved convex 2½ inch wide and ¼ inch thick. As the wheel rolls on the pavement, the spoke ends of the spokes do not come in contact so that the wheel rolls smoothly without any vibration.

The wheels have monogramed caps over the ends of the hubs with the name of the extinguisher manufacturer placed thereon. These wheels are being furnished in various diameters. The approximate same general design applies to wheels with diameters as small as sixteen inches. The wheels illustrated apply to a 40-gallon extinguisher.

Other typical wheels are the 30-inch diameter with grooved convex tires for smaller extinguishers. The 16-inch diameter for 10-20 gallon extinguisher and the 24-inch wheel with 1⅜-inch wide channel tire. These dimensions give the reader somewhat of a picture of the specific size of wheel as produced for such use.

In a general way the design of these steel built wheels is such that the spokes at the hubs are arranged in a staggered position. In the wheel, as shown, the two rows of spokes at the hub are three inches apart but at the rim the spokes come on a straight line.

A distinctive feature of these wheels is the fastening of the spokes at the hub and tire. The steel spokes are forged while hot into the hub and have the heads formed on the inside of the hub and shoulders on the outside. This produces a spoke fastening similar to that of a boiler rivet. The spokes are firmly headed and shouldered into the tire and as they are in a trussed position (not straight) a wheel is produced that is light in weight, yet very strong and sturdy.

Added strength without excessive weight, always an important consideration in wheel design, is gained by the light weight tire having the groove in the middle and the tire convex. The grooves give additional stiffness to the tire, and as has been pointed out provide protection for the spoke heads and for the floors. This general type of wheel has been in use by a number of fire extinguisher manufacturers for a number of years, proving eminently satisfactory.

Keystone Fire Chiefs Meet

The Keystone Fire Chiefs of Pennsylvania held their fall meeting in Shamokin, Pa., on October 5. In the absence of President Frank Soule, Chief Leed, vice-president, presided.

Nineteen new members, mostly from Berks county, were elected to membership. A membership drive was started in this county to end at the time of the meeting in Reading on November 19.

Fred Zeiser, president-elect, thanked the men present for honoring him with such a high office. The annual meeting will be held in Reading and Chief Baum is working on the arrangements. The meeting will be held in the Elks Club and the annual banquet will also be held there, followed by vaudeville entertainment and addresses.

Mayor William Sharman will deliver the address of welcome to which President Frank Soule will respond. Chief Ross Davis of Philadelphia and president of the International Association of Fire Chiefs will talk on the traffic problem and fighting fires in the larger cities. State Fire Marshal William Morgan of the Bureau of Fire, Harrisburg, will talk on Fire Prevention. Seibert Witman of Reading will talk on the volunteer fire departments and Chief John G. Neithammer of Reading will summarize some of the fire prevention methods used in that city.

Short addresses will be made by William J. Smith, superintendent of safety, Reading, and also by some of the prominent city officials.

Previously, due to a rule of the association, meetings could only be held at the Hotel Ventig, Philadelphia. At the last gathering, the by-laws were amended and this is the first meeting to be held outside the original meeting place. The committee in Reading are planning for the annual meeting.

Jersey Chiefs and Firemen Meet

Along with the other officers, Charles Greenfield, Chief of the East Orange, N. J., department, was re-elected president of the New Jersey Fire Chiefs' Association. The men who served last year and who were re-elected are Chief Charles Nickerson, Wildwood vice-president; Chief George L. Mitchell, East Orange treasurer; Chief F. A. Trowbridge, Morristown, secretary and Chief A. Lembeck, Demarest, trustee.

The election was held at the annual convention of the association in Atlantic City, N. J. The New Jersey State Firemen's Association held their convention at the same time that the chiefs held theirs.

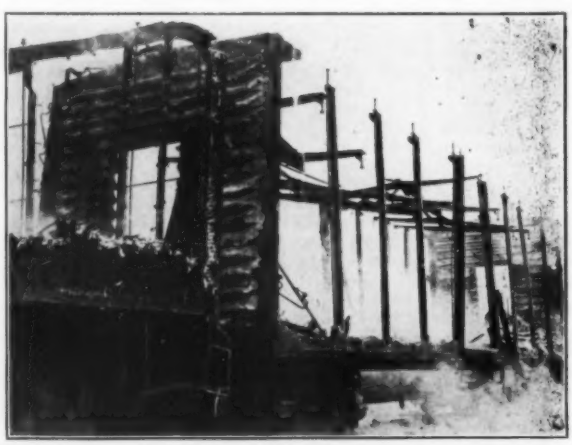
Chief Ross M. Davis of Philadelphia and president of the International Association of Fire Chiefs, was present and urged that the Eastern section of the association increase its membership. Chief Greenfield is also president of this section and it will meet in Philadelphia soon.

This year marks the fiftieth anniversary of the New Jersey State Firemen's Association, which was founded originally to take care of the firemen's interest in the two per cent tax that was levied on all foreign insurance companies. The first meeting was held in the Firemen's Hall in Newark and was attended by firemen from nineteen departments. In the same year the organization held a convention in Trenton.

General Bird W. Spencer, the present head of the firemen's body and president for forty-nine years, was treasurer the first year that the organization was formed. Some of the other officers have held office for long periods.

In commemoration of the fiftieth anniversary, an attractive cloth bound booklet has been published giving the history of the New Jersey State Firemen's Association, photographs of the officers and both a description and illustration of the New Jersey Firemen's Home in Boonton.

Construction of Sellersville, Pa., Station—Due to changes in the plans for the $50,000 fire station, construction on the building for Sellersville, Pa., has been delayed.



Many Die From Fire in Crash of Truck With Train

Three trainmen of a Baltimore and Ohio passenger train and the driver of a gasoline truck were killed when the truck crashed into the train at Criders, Ohio. Flaming gasoline from the truck was sprayed back on to the passenger cars and with the exception of the steel mail coach, all of the cars were destroyed.

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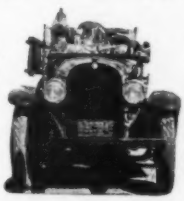

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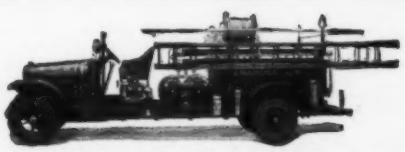

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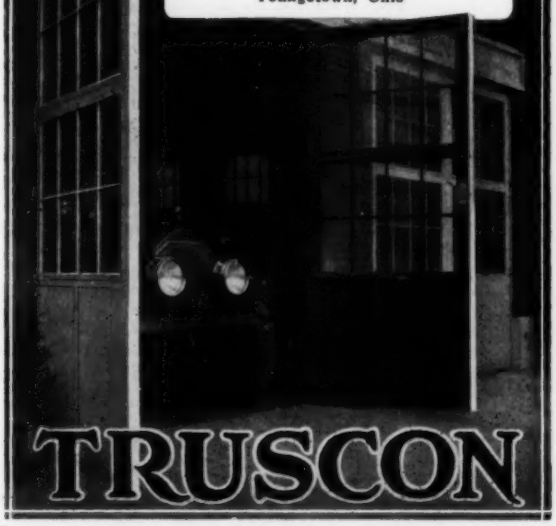

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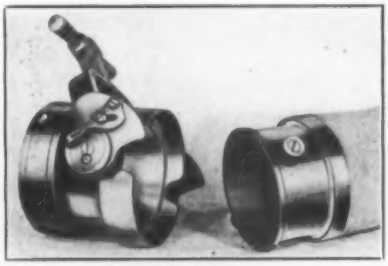

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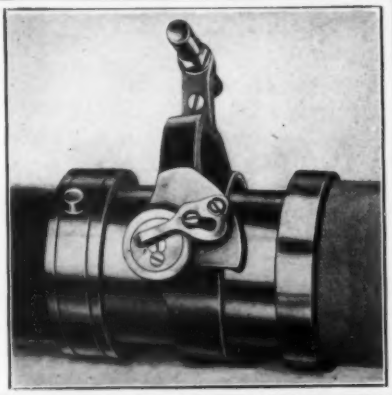

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AMERICAN-LAFRANCE AND FOAMITE-CHILDS TO CONSOLIDATE

Negotiations Between the Two Large Concerns Come to a Head—Stockholders of American-LaFrance to Meet for Ratification

FOR some months negotiations have been under way between the American-LaFrance Fire Engine Company of Elmira, N. Y., and the Foamite-Childs Corporation of Utica, N. Y., looking to the taking over of the latter by the former concern and the change of the name to the American-LaFrance and Foamite Corporation. These negotiations have now arrived at a stage when the companies involved have made public announcement of the fact.

The Foamite-Childs Corporation has had a very substantial growth during the past five years. Their earnings for the year 1927, based on figures for the first six months, it is estimated by the officials, will be between $400,000 and $500,000. The American-LaFrance Company proposes to purchase this business on the basis of paying the Foamite-Childs Corporation dollar for dollar in preferred stock of American-LaFrance for the agreed value of their net assets other than good will, amounting to $1,800,000, and to pay the Foamite-Childs Corporation for their good will, valued on the basis of their earning power, 160,000 shares of the American-LaFrance $10 per par value common stock.

The annual earnings of the Foamite-Childs Corporation, based on their volume, and proposed savings from the combination, exceed the dividend requirements on the preferred capital stock which it is proposed to issue in payment of the assets of that company in the amount of $624,000 as follows:

Estimated Annual Earnings	$400,000.00
Estimated Annual Savings in Expenses	350,000.00
Total	$750,000.00
Dividend Requirements $1,800,000.00 preferred stock at 7%	126,000.00
	$624,000.00

The excess earnings shown, are equal, it is claimed, to 7% of the present outstanding preferred capital stock of the American-LaFrance Company, plus an amount exceeding 5½% on all of the common stock that will be outstanding after the proposed combination has been effected.

In order to take advantage of the knowledge and advice of certain officials of the Foamite-Childs Corporation, it is proposed that the charter of the American-LaFrance Company be amended to provide for a board of directors consisting of fifteen instead of eleven members.

It is also proposed by the American-LaFrance Company, under the new arrangement to enter the smaller fire apparatus field, which will open to it a share of operations to include small towns, villages and rural fire district communities.

A special meeting of the stockholders of the American-LaFrance Company is to be held the company has announced, at the offices of the company, Elmira, N. Y., on October 21 at 11 a. m., to ratify the proposed change. At this meeting the stockholders of the company will vote on the following proposals:

(1) That the authorized capital stock of this company be increased from the present authorized amount (to wit: $10,000,000 consisting of $5,000,000 of preferred stock, the shares of which have a par value of $100 each, and $5,000,000 of common stock, the shares of which have a par value of $10 each) to $15,000,000 and that the authorized increased amount, viz: $5,000,000 be classified so that $2,500,000 of such increase shall consist of 25,000 shares of preferred stock of the par value of $100 each and $2,500,000 of such increase shall consist of 250,000 shares of common stock of the par value of $10 each and that the Certificate of Incorporation of this company be amended accordingly, without any change in the characteristics of either class of stock as so increased from those set forth in the Certificate of Incorporation of this company as heretofore amended.

(2) That the stockholders of this company approve the purchase of the entire business and assets of every kind whatsoever of Foamite-Childs Corporation, including all of its property, real, personal and mixed, tangible and intangible, cash, bank accounts, patent rights, trade-marks, trade names, copyrights, good will and all of its rights, whether fixed or inchoate, and franchises (excepting, however, its franchise to exist as a corporation and such further exceptions as shall, with the approval of the Board of Directors or of the Executive Committee of this company, be specifically agreed upon) and that the American-LaFrance Fire Engine Company, Inc., in consideration of the transfer of said property and business, (1) issue and deliver to Foamite-Childs Corporation $1,800,000 par value of the 7% cumulative preferred stock of the American-LaFrance Fire Engine Company, Inc., and $1,600,000 par value of its common stock all fully paid and non-assessable and also (2) assume and perform all of the debts, liabilities and obligations of every kind of said Foamite-Childs Corporation, except such as shall, with the approval of the Board of Directors or of the Executive Committee of this company, be otherwise expressly excepted, and enter into such agreements collateral or incidental to such purchase of the business and property of said Foamite-Childs Corporation as shall at the time of the closing of title have been approved by the Board of Directors or the Executive Committee of this company.

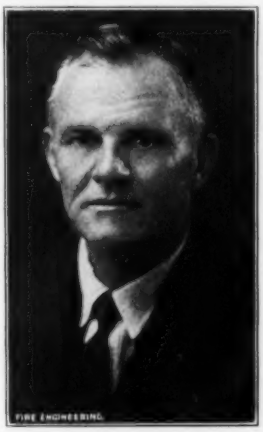
The change of name and the increase in the number of directors will also be voted upon at this meeting.

Chief Wardleigh Revamping Department

Chief Harold H. Wardleigh, head of the fire department in Ogden, Utah, and who succeeded George A. Graves, is working out a plan that will revamp the entire organization.

Mr. Wardleigh is fifty-five years of age, is married and has three children.

He was appointed to the fire department on January 22, 1902 and he has served successfully under Ex-Chiefs Graves, Payne and Canfield. He was made chief in July, of this year. His plan to adopt a new plan of organization for the fire department has met with the approval of the city officials, and some connected with the city have said that there has not been a change suggested for the the city that has met with such unanimous approval.



Chief Harold H. Wardleigh

Firemen May Sue

Firemen in Pasadena, Cal., are considering suing the city for $12,000 in back pay due as a result of the salary increase that was voted by the residents at the election last fall.

According to the election, the increase was to be effective from last January 1; the old salary continued to prevail until four months after the election.

The Supreme Court decided in a similar case at Long Beach, Cal., that the firemen were entitled to back pay, and with this as a precedent, the Pasadena firemen feel sure that they will win should the matter be taken to court.

Stephen B. Boyer, Dead

Stephen B. Boyer, president of the Boyer Fire Apparatus Company, of Logansport, Ind., passed away on Monday, October 10, in that city. Mr. Boyer had been active in the affairs of his company for many years and did much to increase its prestige as a manufacturer of motor fire apparatus, chemical engines and fire appliances.

Firemen Housed by American Legion—During the erection of a station for Engine 17 and Ladder 7 at Dorchester, Mass., these companies of the Boston fire department are quartered in the club house of the American Legion and the apparatus is parked in a nearby street.

Fire Station to be Erected on Circus Grounds—A two-story fire station will be erected on the grounds of Ringling Brothers and Barnum and Bailey's circus in Sarasota, Fla. This is the winter grounds for the famous circus organization. The station will be under the supervision of Chief Maitland Knowles.

Fire Department Commended for Handling Crowds—The Boston, Mass., city council passed a resolution, "Resolved that the Boston city council hereby commends the members of the fire department for the efficient assistance rendered by them in the handling of the immense throng at the reception to Col. Charles A. Lindbergh in the Boston area."

Portland, Ore., to Launch Three Fireboats—Shortly after November 1, Portland, Ore., will launch three new fireboats. Each fireboat will be eighty-five feet eleven inches long and will have a draft of only five feet six inches so that it will be able to get up close to a fire. They will be able to develop a speed of eighteen to twenty miles an hour and to pump eight thousand gallons of water a minute at two hundred pounds pressure.

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By EUGEN ARMS,
Manager of the Mutual Fire Prevention Bureau*

JOHN WESLEY might have been thinking of fire prevention when he said, "Cleanliness is indeed next to godliness." Certainly filthiness is very closely related to the fire demon.

Cleanliness is a habit, even as filthiness is a habit. Habits, as deeply rooted as those, are not changed in a day nor without effort on the part of the individual or individuals concerned. The street urchin does not suddenly decide to take a bath and thereafter keep himself clean. Neither does the owner of a poorly kept plant order his foreman to clean up and keep the place clean and get results. Habits are too well formed to be broken with so little effort.

Let us consider for a moment why cleanliness is so all important to fire prevention. Ignition must, of course, first take place, then the fire feeds on whatever combustible material it finds, and it finally detected and controlled or not, according to the means available. It simplifies our fire prevention work materially to make these three divisions and consider each separately. Now let us see how filth affects each division.

Spontaneous combustion is one of the very common causes of fires. This is the term applied to gradual oxidation of porous substances. The heat generated increases the rate of oxidation until the ignition point is reached. Fires from spontaneous combustion are particularly destructive because they usually occur in closets or out of way places where piles of dirt or oily rags accumulate. An oil saturated rag or mop is particularly dangerous, but any accumulation of dust or dirt if either damp or oil soaked is dangerous.

Grease Causes Ignition

A coating of grease and dust on a bearing may be the direct cause of ignition. The clean iron surface of a bearing dissipates heat with sufficient rapidity so that the ignition point is seldom reached. Besides, there is nothing to ignite if the bearing is clean, unless it be one of the old type of flat bearings on a wooden bridgetree. Many other instances might be cited to prove that filth is directly responsible for the ignition of fires.

A much more forceful argument is presented by the second step in the consideration of the subject, the elimination of combustible material. Dust, dirt and filth are almost without exception highly combustible. A match or cigarette thrown on a clean wooden floor will not start a fire, but when the floor is covered with dust or oil or litter, ignition is almost sure to take place if the match is still burning. Then the rapidity with which the fire spreads is entirely dependent on the combustibility of the surface. A clean board floor can scarcely be ignited from the top, and, if ignited, the fire will spread very slowly. A coating of grease or oil or dust speeds up ignition, often to the point of a flash fire or, depending on the nature of the material, an explosion.

The recent explosion and fire in Detroit, where so many lives were lost, was directly traceable to bad housekeeping, according to reports. Highly explosive materials were being used in the process of manufacture, and sufficient quantities were permitted to accumulate on the floors and walls so that when ignited, supposedly by the breaking of a mercury light, the explosion occurred and the workmen had no chance for their lives. When the Northwestern Elevator blew up here in Chicago killing all the workmen near the plant, no one even contended that it was reasonably clean. Such an explosion could not have occurred had there not been great quantities of dust available for ignition. Just previous to the explosion of the elevator in Kansas City, where fourteen lives were lost, the house had been condemned by the government because of its accumulation of dust, and work had begun on cleaning it up.

A recent fire which destroyed a bedding factory in Minneapolis attracted considerable attention. Reports state that the Fire traveled so rapidly across the walls, ceilings and floors that the man who stopped to try to fight it was badly burned before he could get out. Lint everywhere, that is the answer. Bad housekeeping. Read the story of every holocaust that occurs in an industrial plant in America. Details vary, but the main factor is always the same. Fire spread so rapidly that all exits were cut off. And what is back of it? Nine times out of ten it is bad housekeeping.

A Clean Plant Burns Slowly

The third phase of our subject has already been touched on. The most effective system of fire fighting equipment is badly handicapped by a flash fire and usually worthless when an explosion occurs. If the protection is not automatic, the fire must be discovered before apparatus can be used, and rapid spread of fire reduces the probability of its being discovered while it is still controllable. When discovered control depends entirely on the size and stubbornness of the flame, and, other things being equal, the flame depends on the dust and dirt and litter that feeds it. The clean plant burns slowly.

An important point, possibly the most important point, is the effect of cleanliness on the habits and actions of employees. We are told that soap has been one of the greatest factors in the civilization of the world. Personal cleanliness creates higher ideals. Just so plant cleanliness creates careful employees. Only the most slovenly smoker would throw his cigar stub in the center of a clean floor. He seeks justification in the fact that others have discarded their litter in a corner, and, finding it there, adds his stub to the pile. It is human nature to follow where others have led, particularly if that is the line of least resistance.

Cleanliness Increases Pride

The very effort necessary to cleanliness creates a higher morale. Pride on the part of the owners and managers carries down through the ranks. A clean bearing is seldom out of repair. The pride that induced cleanliness insures a smooth running bearing, while the bearing that is buried in grease and dirt runs until it is too hot to run.

We naturally distrust the man with a week's stubble on his chin, soup spilled down his vest, and the mud from many rains on his shoes. That man is careless in everything and we should distrust him. A certain amount of pride is essential to well being. So it is with an industrial plant. Bad housekeeping is a direct result of carelessness, and carelessness is responsible for a very large proportion of fires.

Don't Beat Down Prospects

I have little sympathy with that school of high-pressure salesmanship which teaches that salesmen must beat their prospects into submission by force of argument. It certainly does not work on me, and I do not believe there are many men in responsible positions on which it can be worked. Desire must be created certainly, a desire to own or manage a clean, well kept, orderly and efficient plant. Study your plant and study your man. Accompany your fire prevention argument with an appeal to pride, the safety and well being of employees, higher morale among the employees, or all of these things, and such others as are suggested by the conditions.

In our work we have found the organization of an inspection and fire brigade among the employees to be the most practical means of enlisting the interest of the men. On the inspection work the plant is divided into departments, and two men are selected from each department to take their regular turn on the weekly inspection. All suggestions are submitted to a committee composed of the management and workers. On the fire brigade each man is assigned a job when the fire alarm rings, and each department is put under one head, with a fire chief over all. That is the bare skeleton of the organization. The details must be suited to the industry and to the plant.

Pride in an industrial plant must originate with the management and emanate down through the ranks. It cannot be expected to originate with the employees. It, therefore, becomes the duty, and it should be the pleasure and pride, of every management to make housekeeping one of the major subjects of its industrial program and be content only when the highest standards are maintained.

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* Excerpts from address delivered at the Annual Safety Congress, Chicago, Ill.

Oreland, Cal., Department Re-Organized—The fire department of Orland, Cal., has been reorganized with specific duties for each of the firemen.

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The lowest per-capita fire loss, during both 1925 and 1926, of any city in the world!

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Your very truly,

(Signed) D. W. BROSNAN,
Chief Fire Dept.

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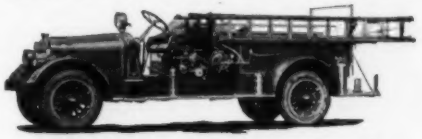

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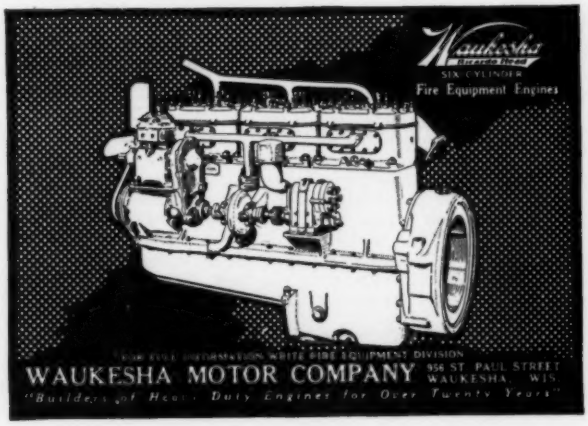

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FIRE DEPARTMENT ACTIVITIES

Fire Threatens Hagerstown, Md., District—Fire starting in a restaurant threatened the business section of Hagerstown, Md.

McKees Rock, Pa., to Purchase Apparatus—Bids have been invited by the Borough of McKees Rock, Pa., for fire apparatus.

Madrid, Ia., Postpones Apparatus Purchase—Madrid, Ia., has decided to postpone the purchase of fire apparatus.

Louisville, Ga., Department Motorized—Louisville, Ga., has completed the motorization of the fire department.

Cohoes, N. Y., Receives Foam Apparatus—Cohoes, N. Y., has received foam equipment and has installed it on the ladder truck.

Siren Installed at Fishkill, N. Y.—A Federal siren has been installed in Fishkill, N. Y. The siren is the gift of the fire company to the village.

St. Matthews, Ky., to Purchase Pumper—The Community Club of St. Matthews, Ky., has purchased a pumper for the volunteer fire department.

Saugatuck, Minn., to Purchase More Apparatus—Another pump and chemical truck will be purchased for Saugattuck, Minn.

Spirit Lake, Ia., Chief Given Gold Badge—Chief R. S. Miller of Spirit Lake, Ia., was presented with a gold badge in honor of his twenty years of service as chief.

Edinboro, Pa., Purchases Fire Apparatus—Fire apparatus has been purchased by Edinboro, Pa., from the General Motors Corporation.

Royal Oak, Mich., Receives Ladder Truck—A ladder truck has been delivered to Royal Oak, Mich. Rather recently the city added a Seagrave pumper to its equipment.

Milford, Conn., to Have Central Station—A new central fire station and a new fire alarm system will be placed in Milford, Conn., at a cost of $185,000.

San Francisco to Add Lieutenants—Fourteen new lieutenants will be named for the San Francisco department. The positions carry salaries of $222.50 a month.

Middlepoint, O., to Celebrate Arrival of Apparatus—A celebration will be held in Middlepoint, Ohio, to mark the arrival of the new fire apparatus.

Woonsocket, R. I., Outlines Drill Tower Course—A course of instruction has been outlined for the new drill tower of Woonsocket, R. I., which has just been completed.

West Orange, N. J., to Purchase Fire Apparatus—An ordinance has passed authorizing the purchase of new fire apparatus for West Orange, N. J.

Frankford, Pa., to Dedicate New Fire Station—A committee is working out plans for the formal dedication of the new No. 14 fire house in Frankford, Pa. The ceremonies will probably take place the early part of October.

Comm. Dorman Broadcasts Over Radio—John J. Dorman, fire commissioner of New York city, spoke recently on the subject of fire prevention from the municipal broadcasting station WNYC.

Reusse, Chief of Fulda, Minn., for 30 Years—Chief O. C. Reusse of Fulda, Minn., believes that he has the longest record of fire chief in the state. He has served as chief of Fulda, for thirty years. He is now sixty-two years old.

Addison, Mich., Receives New Apparatus—A Boyer fire truck for rural fire protection has been delivered to Addison, Mich. It is equipped with three forty-gallon chemical tanks, a pump and the necessary accessories.

Vandals Destroy Aurora, Minn., House—A reward has been posted by the village of Aurora, Mich., for the arrest of the vandals who destroyed about 320 feet of fire hose in the village fire hall.

Ft. Dodge, Ia., Firemen Weave Net—A sixteen foot net has been woven by the firemen of Fort Dodge, Ia., to be used as a protection for the men doing work on the drill tower. The net is woven of one-half inch manila rope with a three-inch mesh.

Brinkley, Ark., Settles Dispute—The city council of Brinkley, Ark., has agreed to purchase $7,000 worth of new equipment for the fire department and the department has agreed to forget about the walk out that had been arranged to take place.

Chief Noll of Poughkeepsie, N. Y., Wants Pumper—Opposition has developed to Chief Noll's recommendation that Poughkeepsie, N. Y., purchase a new pumper. A member of the council believes that a chemical squad wagon would answer the purpose.

Shearwood, Assistant Chief in Cincinnati—Fire Marshal Edward Shearwood has been promoted to assistant chief of department to fill the vacancy caused by the death of George Dillinger. This office carries a salary of $3,700 and the appointment was effective from October 1.

El Dorado, Kans., Purchases Apparatus—El Dorado, Kans., has purchased a four-way combination Seagrave pumper, ladder, booster and hose truck. It has an eighty-gallon booster water tank, a 750-gallon pump and 266 feet of ladders. The body has a capacity for five hundred feet of hose.

Urge That Paid Firemen be on Duty in Houses—At a meeting of fire chiefs in Camden, N. J., it was urged that each volunteer fire company have a paid fireman constantly on duty to assist in getting the apparatus out in case of fire. This action was taken because of the large number of heavy fires in isolated sections.

Veteran Exeter, N. H., Firefighter, Dead—George H. Carter, for more than fifty years a member of the Exeter, N. H., department and for twenty years chief, died from erysipelas at the age of seventy-five. He had retired from the service on April 3, 1921 due to his advanced age. He is survived by his wife and a foster son.

Increases Made in New York Fire Department—Salary increases were approved for the members of the New York Fire Department as follows: eighty-six battalion chiefs from $4,490 to $4,790; deputy chief medical officer from $5,500 to $5,800; eight battalion chief medical officers from $4,490 to $4.790; one captain, special detail from $4,200 to $4,500; 328 captains from $3,700 to $4,000 and 508 lieutenants from $3,200 to $3,400.

Carroll, Ia., Fire Department to be Dissolved—The Carrol Union Fire Department of Carroll, Ia., will be disbanded after serving for many years. It will be succeeded by a semi-paid organization. Under the new plan, title to the apparatus will be held by the city. Some of the members of the old organization have applied for membership in the new body. A new pumper has been delivered to the city.

Kansas City, Mo., Completely Motorized—The last two horses in the Kansas City, Mo., department have been sold and the company which was formerly horse-drawn will have a small truck for its work. Although the rest of the department was motorized for some time, the horse drawn company was retained in the stock yard section because of the ability to traverse the narrow lanes of the section.

New York Fire Loss $21,671,755—The 1926 fire loss of New York City has been set at $21,671,755 according to figures made public by the Brooklyn Chamber of Commerce. Manhattan suffered from 9,956 fires with a damage of $9,927,105; Brooklyn 7,639 fires with a damage of $7,135,790; Queens, 2,778 fires with a damage of $2,500,710; Bronx, 3,718 fires with a damage of $1,700,670 and Richmond 1,094 fires with a damage of $307,450.

Fire Tempers Tone of Editorial—The editor of the *Messenger* in St. Albans, Vt., had just completed an editorial on fire prevention week when apparatus was called to extinguish a fire in his home. After the fire was out he added the following to his editorial: "An ounce of prevention is worth a pound of cure in most things, but in the case of fire, prevention is worth ninety-nine per cent. Of course, there are at times unpreventable fires, but the percentage is almost negligible."

Dr. Goodrich Heads Civil Service Doctors—At the annual convention of the Police and Fire Surgeons and Medical Directors of Civil Service Commissions, held at Los Angeles, Cal., Dr. E. C. Goodrich of Los Angeles was elected president; Dr. George C. Hunt, Chicago, vice-president; Dr. John J. White, New York fire department, secretary-treasurer; Dr. Hubley R. Owen, director. Dr. Harry M. Archer, former president, of the N. Y. fire department also attended.

Eastern Chiefs to Hold Executive Meeting

A meeting of the officers and directors of the Eastern Association of Fire Chiefs will be held at Atlantic City October 27th. The session is scheduled for 3 p. m. at Fire Headquarters.

Chas. W. Greenfield, Kearney, N. J., is President of this Association and Chief J. H. Golden of Cohoes, N. Y., Secretary.

PROPOSED IMPROVEMENTS

Lexington, McLean Co., Ill.—City Council voted to purchase a chemical car and a double hend siren for the fire department. H. R. Crawford, Jr., Chief of the Fire Dept.

Zeeland, Ottawa Co., Mich.—Wm. G. Heasley, Chief Fire Dept. recommended the purchase of a 600 gal. pumper for the department.

Sayville, Suffolk Co., N. Y.—Plans are being made for the purchasing of a new piece of apparatus for the fire department

Union City, Hudson Co., N. J.—A new fire company being organized for the purpose of fighting only chemical and oil fires, by Commissioner William Gardner, according to reports.

Selma, Fresno Co., Calif.—Chamber of Commerce stated that more fire alarm boxes should be installed in certain sections of the city.

Martinez, Contra Costa Co., Calif.—Fire department to raise funds for the purchase of additional equipment.

Garden Grove, Orange Co., Calif.—An American-LaFrance combination hose and pumping car was purchased for the fire department. J. J. Tobias was elected chief.

La Mesa, San Diego Co., Calif.—La Mesa Heights Chamber of Commerce decided to take up the matter of fire protection with the county supervisors and see if a fire district could be established.

Auburn, Androscoggin Co., Me.—Reports state plans are being made for the construction of a new fire station at East Auburn.

Ellicott City, Howard Co., Md.—Howard County Volunteer Firemen's Assn., purchased an American-LaFrance chemical car.

Mansfield, Bristol Co., Mass.—Movement has been started for the purchase of a new small piece of fire apparatus for Hose Co. No. 3. Herbert E. King, Chief of Fire Dept.

Westwood, Bergen Co., N. J.—Reports state that fire alarm system may be improved here.

East Stanwood, Snohomish Co., Wash.—A volunteer fire company was organized here with C. J. Gunderson as chief.

Minneapolis, Hennepin Co., Minn.—A site for a new fire station on Troost Ave. was purchased by the city.

Redding Prepares for 1928 Meet

Breaking away from the regular practice, the California State Firemen's Association at the annual convention in Stockton in September, voted to meet in Redding the first time that a convention was awarded to a town having a volunteer fire department organization.

Hosts to Firemen

Chief Ed. Steinhauer and First Assistant Chief H. K. Smith who will be hosts to the 1928 California State Firemen's Association.

Actually the fight of Redding for the honor of entertaining the California Firemen assembled at a convention started in 1925. At that time H. K. Smith, chief, openly declared at the convention held in Sacramento that his city would place a bid for the gathering at the next year's assembly. In 1926 Redding was a contender for the gathering but graciously gave way for Stockton. At the Stockton convention this year, Redding had its dreams come true. Representatives of the local department announced that they had the moral and financial support of the Redding business men in planning for the preparations and entertainment of the firemen.

Redding offers many attractions for the delegates to the annual meeting. There are swimming, boating and pleasure places almost within the limits of the municipality. There is Lassen Peek, the only active volcano in continental America, within easy reach and in plain sight of the city. The famous Pit river power plants, supplying electric energy to the entire northern and central part of the state, are located within forty miles of the city, with easy access by means of excellent highways. The old "ghost" town of Shasta, noted in early days as the home of Joaquin Miller and other later famous characters, is seven miles distant, with the ruins of its old courthouse and moss covered walls of pioneer business houses still standing, giving mute evidence of the commercial activities of the distant past.

CONVENTION DATES

Oct. 17-19—KANSAS STATE FIREMEN'S ASSOCIATION. Fortieth annual convention, Kansas City, Kans. K. D. Doyle, secretary, Wamego, Kans.

Oct. 17-19—KANSAS STATE ASSOCIATION OF FIRE CHIEFS. Eleventh annual meeting, Kansas City, Kans. Secretary, K. D. Doyle, Wamego, Kans.

Oct. 18-21—SHORT COURSE FOR FIRE-FIGHTERS. 3rd Annual Course, Iowa State College, Ames, Ia. Address, Engineering Extension Department, Iowa State College, Station A.

May 7-10, 1928—NATIONAL FIRE PROTECTION ASSOCIATION (International). 32nd Annual Meeting, Atlantic City, N. J. Secretary, Franklin H. Wentworth, 40 Central Street, Boston, Mass.

St. Louis Tornado and Firemen

(*Continued from page* 1076)

two were seriously injured and 321 business buildings, including the city hospital, a large church and 7,200 homes were destroyed.

On April 13, 1911, a similar storm wrecked parts of the city, killed six people and did a property damage that was estimated at somewhat over $2,500,000. In North St. Louis, a grain elevator belonging to the Burlington Railroad was blown into the river. This storm was accompanied by what was believed to be the heaviest fall of hail ever experienced in St. Louis. The hail did severe damage to the crops and to the buildings.

Marvel at Low Loss of Life

Those who witnessed the storm marvel that the loss of life was not higher.

It is believed that the substantial nature of the city's architecture saved many of the buildings from destruction and reduced the hazard somewhat from flying pieces of lumber.

Firemen had an important part in the rescue work that was organized immediately afterwards and in the alleviation of the suffering.

More Chiefs Wanted in Toledo, Ohio—Five additional district chiefs are wanted in Toledo, Ohio, so that the district chiefs may work on a two-day-on and a two-day-off basis. It was explained that this plan would reduce the number of drivers required in the department. One lieutenancy would be abolished under this arrangement.

Statement of Ownership

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of FIRE ENGINEERING, published bi-weekly at Albany, New York, for October 1, 1927.

State of New York, County of New York, ss.:

Before me, a Notary Public in and for the state and county aforesaid, personally appeared Frederick Shepperd, who, having been duly sworn according to law, deposes and says that he is the Managing Editor of FIRE ENGINEERING and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of Congress of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, Case-Shepperd-Mann Publishing Corporation, 225 West 34th Street, New York City.

Editor—Robert H. Lockwood, 225 W. 34th Street, New York City.

Managing Editor—Frederick Shepperd, 225 W. 34th Street, New York City.

General Manager—I. H. Case, 225 W. 34th Street, New York City.

2. That the owners are:

Case-Shepperd-Mann Publishing Corporation, 225 W. 34th Street, New York City.

I. H. Case, 225 W. 34th Street, New York City.

Frederick Shepperd, 225 W. 34th Street, New York City.

K. M. Mann, 225 W. 34th Street, New York City.

R. H. Lockwood, 225 W. 34th Street, New York City.

3. That the known bondholders, mortgagees, and other security holders, owning or holding 1 per cent, or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

FREDERICK SHEPPERD,
Managing Editor.

Sworn to and subscribed before me this 30th day of September, 1927.

(Seal) GODFREY L. TRAUTMAN,

(My commission expires March 30, 1929)

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(Reg. U. S. Pat. Off.)

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are indispensable where high pressure service is required. With Eastman equipment any size streams can be easily handled by one man.

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are designed by engineers who for over thirty years have specialized in equipment for producing fire-fighting streams that are unsurpassed for solidarity, distance and effectiveness.

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FALSE ALARMS

Drawing by Art Espy

FIREMAN'S COURSE

For the benefit of the rookie, this is what is known as "hose menders."

MISMANAGEMENT

The townspeople of a South Dakota village were in the local court in full force to hear the case of the city versus one of the fire department members who had been injured in a collision. There was considerable interest in the case for several members of the department were hurt when two trucks collided on their way to a fire.

Olie Olsen, a civilian, who happened to see the smash-up, was on the witness stand.

"You say," thundered the lawyer, "at ten o'clock that night you were approaching the crossing and that you saw two fire trucks coming down different streets and neither one blowing its siren."

"Yes," said Ole.

"And just as each truck got to the crossing each blew its siren."

"Yah," said Ole.

"When you saw all of this what did you do?"

"Aye jumped off the street back onto the side walk and aye see the trucks smash."

"Then what did you do?"

"Vell aye said to myself, this bane one hell of a way to run a fire department."

NO FEAR

A seedy looking individual passed by the fire station when the large doors were open. He paused and looked at the shining fire apparatus. He seemed bashful. He approached closer to the chain that barred his admittance. Just then the chief looked up at him.

"Any chance for a job in the fire department, chief?" asked the seedy one.

"No, don't get frightened," said the chief, "there's no chance."

LOOKS PROMISING

Two of the old time members of Station 4 were discussing the rapid rise of Tom Burley who had just been made lieutenant. As one of the old timers helped to train the new officer, he was proud of the appointment.

"That boy's got good stuff in him."

"Yeh," said the other, "I betcha I know the bootlegger that sold it to him."

A SPECIAL HONOR.

In traffic congestions or road trouble, the fire department is usually accorded special privileges. In this case the fire apparatus roared down the main highway to a fire while the chief in his roadster, anxious to make better time, cut across a road that led over an old bridge.

McGraw had been stationed as a police guard at the entrance to this unsafe bridge. As the chief's car came up, it was held up.

"What the hell?" roared the chief.

At that moment McGraw recognized the man as chief of the fire department.

"Oh pardon me, sir. I didn't recognize you Chief. You see, I got orders to let no traffic through because of the rotten bridge, but seein' it's you, that's all right. Go right ahead, chief."

Pretty maiden in a prettier one-piece bathing suit: Swim along there, little fish—what you don't know won't interest you.

PROPERLY WARNED.

It is certainly tough on a fireman when members of his company find out that he is courting a pretty girl. The fireman's comrades had a sneaking suspicion that he was going to make a social call that particular night. It was a freezing cold night with the wind singing around the corner of the station. But this did not daunt the Romeo and the two firemen who said that they would walk with him to that street.

They did. The Romeo went to the apartment on the first floor and his friends remained below.

After the usual conversation, the gallant said, "Mary, better pull the shades down."

"Why?"

"Two below outside, Mary."

THE USUAL STYLE.

A large fire had occurred in a down town hotel that was occupied mostly by women guests. The reporter had handed in his account to the copy desk.

Glancing at the story, the copy-reader asked of the editor, "How shall I head this hotel fire story?"

"'Guests flee in scanty attire,' of course."

STILL THOUGHT THE SAME

About a year ago one fireman loaned another fireman a quarter. It was loaned with the usual promise that it would be returned next day. But next day came around and then some more days. Due to a change in assignments, the men did not see each other.

However after a year, there was another shift and the two firemen were again located in the same house.

"Jack here's the quarter I owe you from last year," said Tom when the two had met.

"I don't know as I ought to take it," replied Jack. "You've kept it so long that I don't believe it is worth the two bits for me to change my opinion of you."

"How can I cure my son of striking matches on his trousers?"

"Buy him some celluloid pants."

WELL, WHEN I WUZ TRAPPIN', I HAD TO TURN IN $250,000 WORTHA FURS A WEEK!
I UPS WITH MY WINCHESTER AND WITHOUT STOPPING TO EVEN TAKE AIM I BRUGHT DOWN THE BIGGEST MOOSE EVER SEEN IN THEM PARTS!
YESSIR! I CAUGHT EIGHTY-TWO PICKEREL AND THE SHORTEST ONE WAS THIS LONG! BELIEVE ME, THEM WUZ SOME FISH!
TRUTH IS MIGHTY AND WILL PREVAIL
WHEN IT COMES TO "FISH" STORIES WE'RE ALL WET, KID!
YESSIR, I STILL HAVE THE MEDAL! STRONGEST MAN IN TWENTY-SIX COUNTIES!
I USEDTA BITE A STEEL RAIL IN TWO, THREE TIMES A DAY! WHEN THE SOUTHERN EXPOSURE R.R. LAID THEIR FIRST LINE, I CUT THE RAILS TO SAVE TIME-WITH MY TEETH!

Drawing by Art Espy

WHAT EVERY YOUNG FIREMAN SHOULD KNOW

Continuing the popular short course of instruction in fire department terms, the student is asked to consider one of the most popular rooms in the station. Study the illustration carefully and you will never need to ask for a definition of "The Bunk Room."

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Since last December our offer in this publication has been accepted by 3112 Fire Departments. Up to October 10th over 12,000 sample packages have been sent by paid parcel post without any cost whatsoever to the "Boys."

Resulting from this free distribution of Kilsoot, 1874 purchases have been made by fire departments, of which 263 have bought two and three times. In 237 communities, either the fire company or some member acts as our local agent.

These sales make profits which are often used for firemen's relief work.

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"Now! no more running up ladders to fight chimney fires for we can lick the best of them in 15 minutes. We send a man with two packages and he brings back one. One package KilSoot has done the job."
Chief Ticknor,
Warrensburg, N. Y.

"It has always proven its worth to our people. In fact we believe from our experience with KilSoot that it is quite the duty of every Fire Company to lend in the supplying of this cleaner if possible, as a duty they owe to their communities."
Chief Eidemiller,
West Milton, Ohio.

"In every case it has put out the fire immediately and cleaned the chimney, too. You may now ship 6 dozen each for our two fire companies and 18 dozen for the taxpayers."
Chief Crandelmire,
Brownville, Me.

"Threw the package into the furnace door and before I could get back upstairs, the fire was out. One man can do the work with KilSoot."
Chief Taggart,
Asbury Park, N. J.

"It surely is wonderful stuff for chimneys and we think every householder should have it on hand."
Chief Brookins,
Norwich, N. Y.

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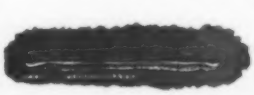

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"Four years ago you sold my Commissioners one thousand feet of Bi-Lateral Fire Hose against my will. For the past twenty years I have always stuck to the stiff multiple hose, being afraid if I got away from that my Commissioner would buy me cheap hose. Since using your Bi-Lateral hose and watching my men work with it I frankly say that I never knew what good hose was before. Enclosed you will find a Purchasing Order No. 728 covering another thousand feet. Couple this with the rocker lug coupling and send us twelve combination spanners, No 45."

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Just run down the list of equipment, fill out the coupon below, and mail it to us with the numbers that indicate the equipment in which you are interested.

We will then notify reliable manufacturers of your interest in such equipment and request that without cost to you or any obligation they send you the information you desire.

They will gladly do this. So go to it! Ask for what you want. This page is for your convenience. Use it now—and whenever you decide to buy new equipment of any kind.

For Information on Any Equipment Not Listed, Write on This Page or Use Separate Sheet.

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56 Hose Fire.
57 Hose, Chemical.
58 Hose Holders.
59 Hose Jackets.
60 Hose Standardization Tools.
61 Hydrant Draining Pumps.
62 Hydrants, Fire.
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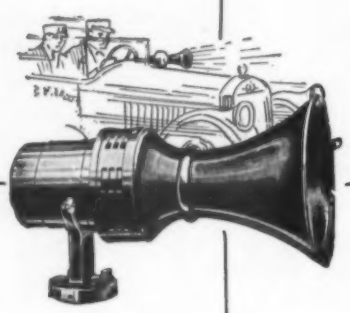

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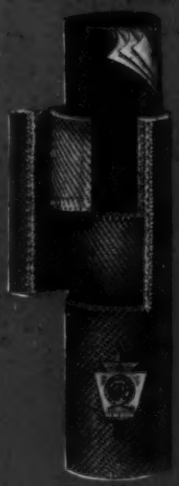

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